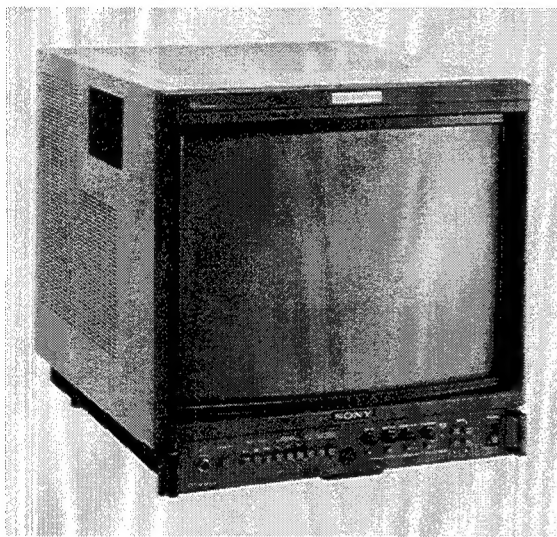


SONY

TRINITRON® COLOR VIDEO MONITOR

BVM-1916

BVM-2016P



BVM-1916

Chassis No. SCC-D19B-A

BVM-2016P

Chassis No. SCC-D12B-A



OPERATION AND MAINTENANCE MANUAL

1st Edition

Serial No. 2000001 and Higher (BVM-1916)

Serial No. 2000001 and Higher (BVM-2016P)

WARNING

For the customers in the USA


This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

For the customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.


VORSICHT!!

Hinweis für den Benutzer
Das Gerät ist nicht für den Einsatz in Bildschirmarbeitsplätzen vorgesehen.

CAUTION!!

**DO NOT USE THE EXTERNAL DEGAUSSER TO DEMAGNETIZE THE SCREEN.
BE SURE TO USE THE DEGAUSS SWITCH ON THE FRONT PANEL.**

ATTENTION AU COMPOSANT AYANT RAPPORT A LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UN TRAMÉ ET UNE MARQUE  SUR LES DIAGRAMMES SCHÉMATIQUES, LES VUES EXPLOSÉES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DU CIRCUIT QUI SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT SONT IDENTIFIÉS DANS CE MANUEL. SUIVRE LES PROCÉDURES QUAND LES COMPOSANTS CRITIQUES SONT REMPLACÉS OU LE FONCTIONNEMENT IMPROPRE EST SUSPECTÉ.

ATTENTION!!

**NE PAS UTILISER DE DÉMAGNÉTISEUR EXTERIEUR POUR DÉMAGNÉTISER L'ÉCRAN.
UTILISER LA TOUCH DE DÉMAGNÉTISATION (DEGAUSS) SUR LA PANNEAU FRONTAL.**

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Section 1 Operation

1-1. Overview

1-1-1. Features

The BVM-1916 and BVM-2016P are high-performance color video monitors designed for critical evaluation of video signals in broadcasting stations and production houses.

The BVM-1916 is the NTSC model intended for use in NTSC color standard areas and the BVM-2016P is the PAL model for the PAL color standard areas. By using optional plug-in type decoder boards, both models permit any of the NTSC, PAL, SECAM, D1 and D2 video signals to be monitored.

The other features and operations are the same.

High-resolution picture

The Fine Pitch Trinitron picture tube (0.4-mm aperture grille pitch) gives a high resolution, high contrast picture. Horizontal resolution is more than 600 TV lines at the center of the picture.

Stabilized color temperature

The incorporated beam control circuit maintains the color temperature constant for a long period of time.

Picture aspect selection

In addition to the conventional 4:3 aspect, the 16:9 aspect can be selected for monitoring the increasing number of wide-screen programs.

Split screen for precise picture confirmation

The lower half of the picture can be displayed in monochrome mode while the upper half is displayed in color mode. This facilitates confirmation of the luminance and chrominance channels, evaluation of the noise in the chrominance or luminance channel, etc.

Blue-only mode for precise evaluation of noise components

In blue-only mode, an apparent monochrome display is obtained with all three control grids driven with a blue signal. This facilitates color saturation and phase adjustments and observation of VTR noise.

Easy-to-use menu operations

The essential parameters to be preset for video monitoring can be easily set by selecting menu options displayed on the screen.

Section 1 Operation

Other features

- Picture setup function facilitating adjustment of the monitor's reference black for the black level of an incoming video signal
- Pulse cross function for simultaneous checking of the horizontal and vertical sync signals or VITS (Vertical Interval Test Signal)
- Built-in crosshatch and 100% white signal generators, facilitating monitor setup
- VITC (Vertical Interval Time Code) display possible using the optional BKM-1460 VITC adaptor
- Auto chroma/phase adjustment, automatic white balance adjustment etc. are possible using the optional BKM-2056 auto set-up adaptor.
- Precise setting of black level of the monitor, using the optional BKM-1480 black level signal generator
- A drawer containing convergence, white balance and menu controls and other function selectors
- High-performance comb filter available for the BVM-1916 as built-in standard. (For the BVM-2016P, the BKM-1422 is available as an option.)
- Auto and manual degaussing
- Three-position AFC switch
- Overdrive protection circuit to protect against picture tube damage
- EIA standard 19-inch rack mounting, using the optional BKM-2000 rack mount kit

1-1-2. Options

The following optional accessories are available for flexible changes and enhancement of the functions of the BVM-1916/2016P.

Caution

When installing the optional boards, be sure to perform the necessary settings by following the procedure mentioned in "To specify the installed optional boards" of "1-4-7. Defining the Monitor Configuration." If the settings are not correctly performed, the optional boards may not function properly.

BKM-1410 NTSC adaptor (BC board) [built-in standard for the BVM-1916]

Decoder board for the NTSC color system

BKM-1411 NTSC comb adaptor (BB board)

Comb filter board for the NTSC color system

BKM-1412 NTSC comb adaptor (BT board) [built-in standard for the BVM-1916]

Dynamic comb filter board for the NTSC color system

BKM-1420 PAL adaptor (BD board) [built-in standard for the BVM-2016P]

Decoder board for the PAL color system

BKM-1421 PAL-M adaptor (BM board)

Decoder board for the PAL-M color system

BKM-1422 PAL comb adaptor (BT board)

Comb filter board for the PAL color system

BKM-1430 SECAM adaptor (BE board)

Decoder board for the SECAM color system

BKM-1440 RGB/component adaptor (BF board)

Decoder outputs of RGB or component signals

BKM-1460 VITC adaptor (BL board)

Reader of Vertical Interval Time Code

BKM-1470 safe area display (BQ board)

For displaying the safe area

BKM-1480 black level signal generator (BS board)

For generating black level signals

BKM-2000 rack mount kit

For mounting in an EIA standard 19-inch rack

BKM-2053 auto set-up probe

For auto set-up operation with the BKM-2056 auto set-up adaptor

BKM-2056 auto set-up adaptor (BN, BO and BP boards)

For auto chroma/phase adjustment, auto white balance adjustment, and selection of color temperature

BKM-2085-20 digital 4:2:2 serial input kit (BA3 and BV boards)

For two serial inputs of component digital video signals

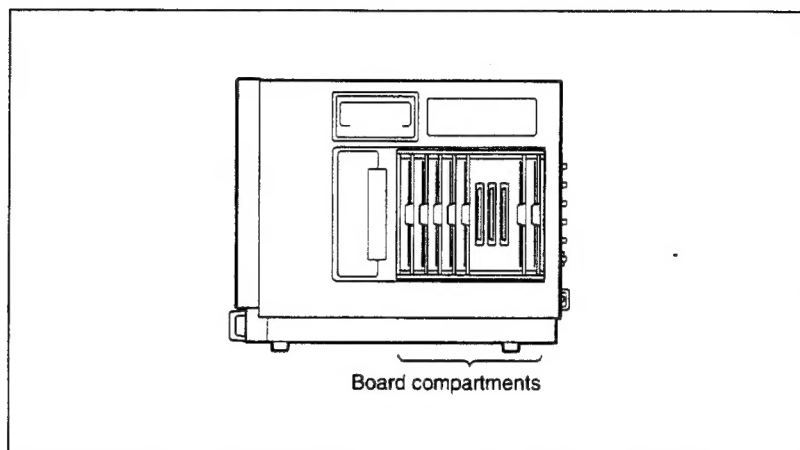
BKM-2090-20 D-2 serial input kit (BA3 and BU boards)

For serial input of a digital composite video signal

Section 1 Operation

Combination of the optional boards

The BVM-1916/2016P is equipped with the board compartments B1 through B5 behind the right-side panel, each of which can hold an optional board selected from the B boards listed above.



Right-side view

The BVM-1916 comes from the factory with the BT (NTSC comb adaptor) and BC (NTSC adaptor) boards installed in compartments B4 and B5.

The BVM-2016P comes from the factory with the BD (PAL adaptor) boards installed in compartment B5.

Note that the combinations of boards are limited by the allowable board assignments, as shown in the table on the next page.

Add the desired boards or replace the supplied BT, BC or BD board with optional boards, referring to the table on the next page.

Notes

- The compartments other than B1 through B5 are reserved for the supplied BA, BG, BH, BI and BJ boards. Be sure to use these boards in the respective compartments having the same names.
- Do not leave compartment B5 empty. Be sure to insert one of the boards specified in the table on the next page. If no board is inserted, the luminance/chrominance or luminance channel will not be activated in composite signal mode.

Board assignment

Board name	Function	Compartment name				
		B5	B4	B3	B2	B1
BB (BKM-1411)	NTSC comb filter	X	○	○	○	○
BT (BKM-1412)	NTSC comb filter	○	○	○	○	○
BT (BKM-1422)	PAL comb filter	○	○	○	○	○
BC (BKM-1410)	NTSC decoder	○	○	○	○	○
BD (BKM-1420)	PAL decoder	○	○	○	○	○
BE (BKM-1430)	SECAM decoder	○	○	○	○	○
BM (BKM-1421)	PAL-M decoder	○	○	○	○	○
BF (BKM-1440)	RGB/component adaptor	X	X	○	X	X
BL (BKM-1460)	VITC reader	X	X	X	○	X
BQ (BKM-1470)	Safe area display	X	△	X	○	X
BS (BKM-1480)	Black level signal generator	○	○	○	○	○
BN, BO, BP (BKM-2056)	Auto set-up adaptor	○	○	X	X	X
BV, BA3 (BKM-2085-20)	Digital 4:2:2 serial interface	X	X	X	X	○
BU, BA3 (BKM-2090-20)	D-2 serial interface	X	X	X	X	○

○ : acceptable

× : not acceptable

△ : acceptable but the switch or control settings on the subcontrol panels cannot control the display.

Notes

- Do not use the BD (PAL decoder) and the BM (PAL-M decoder) boards simultaneously. This causes malfunctions of the monitor.
- Do not use the BB (NTSC comb filter) and the BT (NTSC comb filter) boards simultaneously. This causes malfunctions of the monitor.

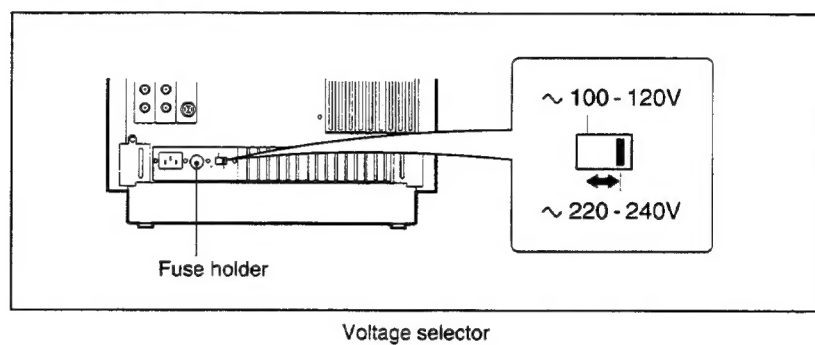
For details on installation and functions of the optional boards, refer to the operation and maintenance manuals of the boards.

Section 1 Operation

1-2. Voltage Selection

The BVM-1916 operates on 100-120 V AC and the BVM-2016P operates on 220-240 V AC.

Before connecting the unit to an AC outlet, make sure the voltage selector at the rear of your monitor is set for the appropriate voltage. If not, change the position of the selector.

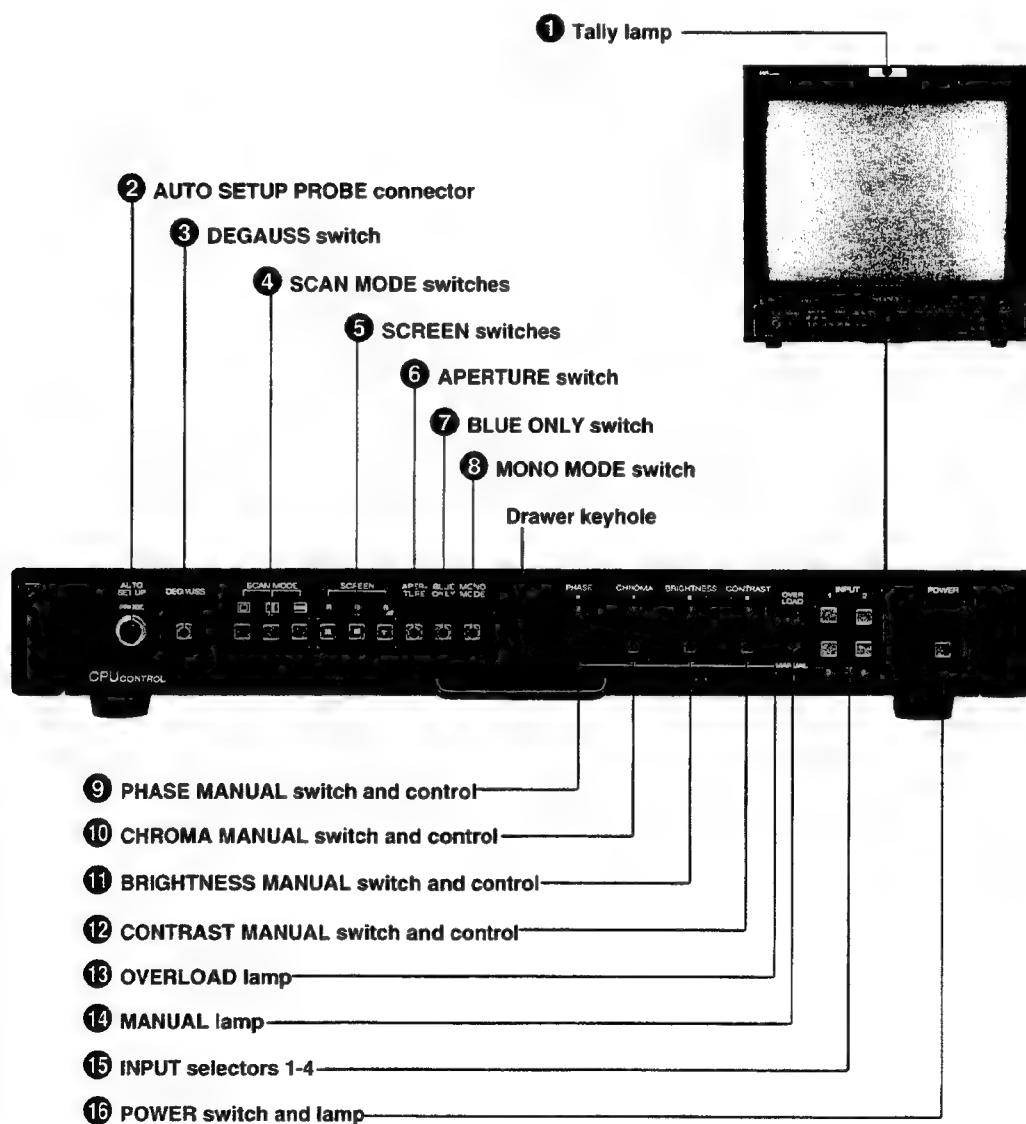


Note

Use a 4A/125 V fuse for the BVM-1916 (100-120 VAC) and a T2A/250V fuse for the BVM-2016P (220-240 V AC). The appropriate fuse is installed at the factory in accordance with the voltage presetting.

1-3. Location and Function of Parts

1-3-1. Front Panel



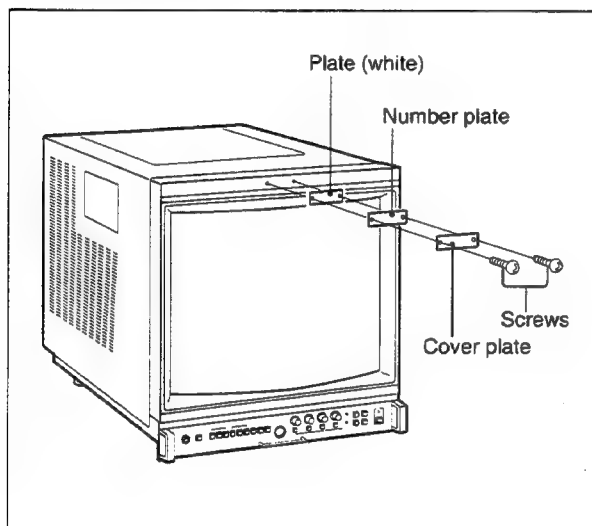
The photo shows the BVM-1916. The parts configuration is common to the BVM-2016P.

Front panel

Section 1 Operation

① Tally lamp

Lights when pin No. 3 and No. 8 of the REMOTE connector on the rear panel are short-circuited. The model number plate has been attached here at the factory. Replace it with one of the supplied tally number plates, as illustrated below.



② AUTO SETUP PROBE connector

Connect the optional BKM-2053 auto set-up probe for auto setup operations.


③ DEGAUSS switch


When the power is turned on, automatic degaussing is activated.


To demagnetize the screen manually, press this switch momentarily with the power on.

When degaussing repeatedly, wait for 5 minutes or more before pressing the switch again.

④ SCAN MODE switches

 (**underscan**): Depress this switch for underscanning. The display size is reduced by approximately 3% so that four corners of the raster are visible.

 (**horizontal delay**): Depress this switch to observe the horizontal sync signal in the left quarter of the screen. Picture brightness is automatically increased for easy observation.

 (**vertical delay**): Depress this switch to observe the vertical sync signal. The picture is shifted vertically and the vertical sync signal is displayed near the center of the screen. Picture brightness is automatically increased for easy observation.

- A pulse cross is displayed by depressing both the  and  switches.

- To resume normal scanning, press to release the depressed switches.

⑤ SCREEN switches

The R, G and B switches turn the red, green and blue beams respectively on and off. To turn off the beam, depress the switch. To turn it on again, press to release it.

⑥ APERTURE switch

Normally keep this switch released. A flat frequency response is obtained.

For aperture correction, depress this switch and adjust the APERTURE control inside the drawer. The boost frequency, 4.5 MHz or 6.5 MHz, can be selected with the S1 switch on the internal BG board.

With the S1 switch set at the 4.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 4.5 MHz for subjective enhancement of the displayed picture.

With the S1 switch set to the 6.5 MHz position, the frequency response can be adjusted continuously with up to 6 dB boost at 6.5 MHz for compensation of aperture loss of the CRT.

⑦ BLUE ONLY switch

Normally keep this switch released. Depress this switch to turn off the red and green signals. A blue signal is displayed as an apparent monochrome picture on the screen. This facilitates CHROMA and PHASE control adjustments and observation of VTR noise.

⑧ MONO MODE switch

Normally keep this switch released (AUTO mode). Color or monochrome mode is automatically selected according to the presence or absence of color burst.

Depress the switch to display color pictures in monochrome (MONO mode).

⑨ PHASE MANUAL switch and control

When this switch is in the released position, the subcarrier phase preset with the PRESETS menu operation is obtained.

To adjust the subcarrier phase manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

Note

The PHASE MANUAL switch and control are disabled when the SECAM system is selected (the SECAM lamp is lit) with the SYSTEM button in the drawer, or the PAL system is selected (PAL lamp is lit) with selecting PAL D mode (the PAL S/SECAM F/COMB S lamp is not lit).

⑩ CHROMA MANUAL switch and control

When this switch is in the released position, the color saturation preset with the PRESETS menu operation is obtained.

To adjust the color saturation manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

⑪ BRIGHTNESS MANUAL switch and control

When this switch is in the released position, the brightness preset with the PRESETS menu operation is obtained.

To adjust the brightness manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

⑫ CONTRAST MANUAL switch and control

When this switch is in the released position, the contrast preset with the PRESETS menu operation is obtained.

To adjust the contrast manually, depress the switch and turn the control.

See "1-4-3. Presetting the Picture Levels."

⑬ OVERLOAD lamp

Lights to warn of overloading of the CRT.

⑭ MANUAL lamp

Lights when any of the four MANUAL switches ⑨ through ⑫ is depressed.

⑮ INPUT selectors 1 - 4

Select the input signal to be monitored by pressing one of these buttons.

The requirements of the input signals can be set with the CONFIGURATION buttons in the drawer and can be assigned independently to the selectors and stored in memory through the INPUT CONFIG menu operation.

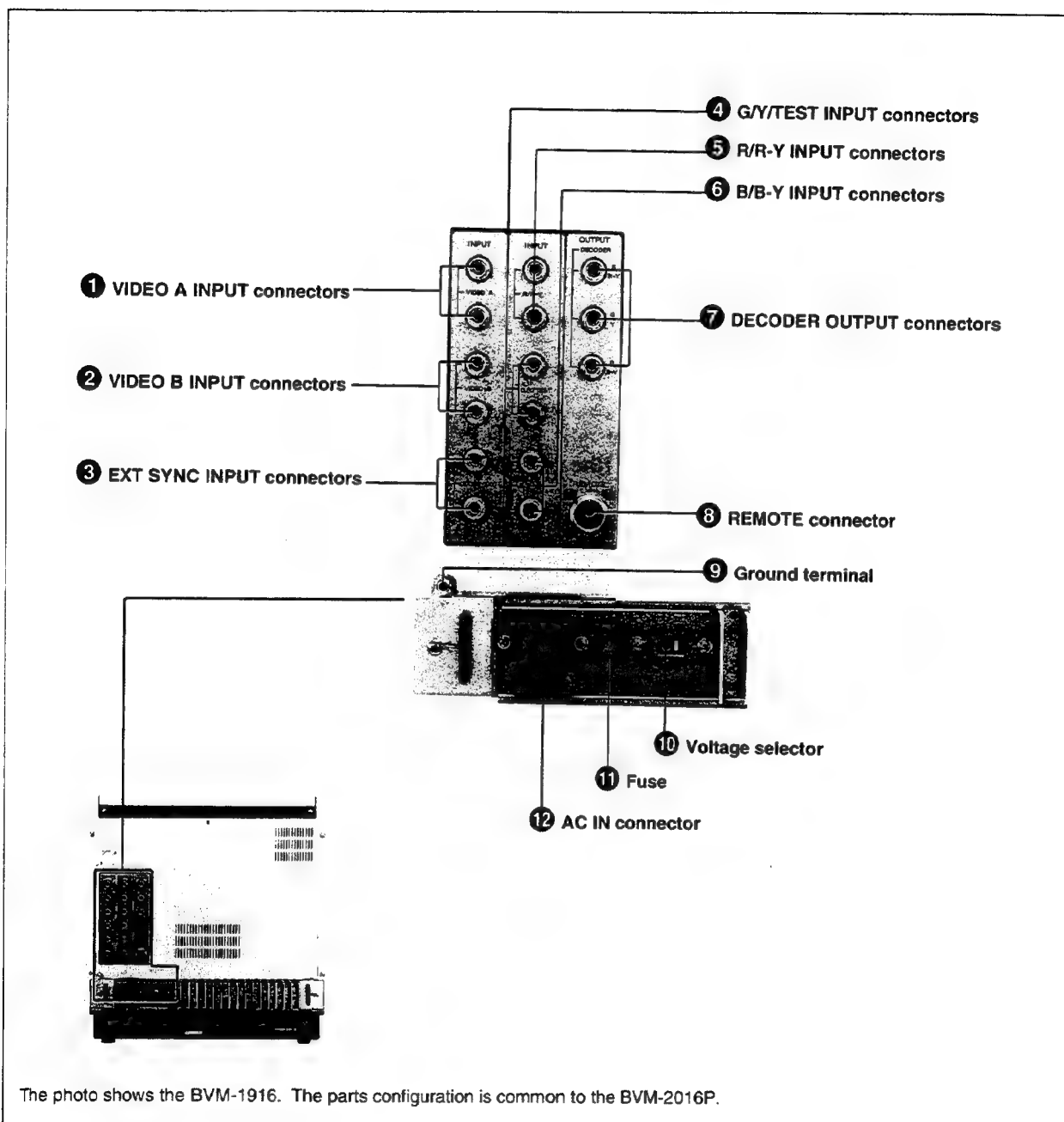
See "1-4-2. Setting the Input Configuration."

⑯ POWER switch and lamp

Depress this switch to turn on the power. The lamp lights. To turn it off, press the switch again.

Section 1 Operation

1-3-2. Rear Panel



Rear panel

1 VIDEO A INPUT connectors (BNC)

2 VIDEO B INPUT connectors (BNC)

Input composite video signals.

Use one connector of each pair for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

3 EXT SYNC INPUT (external sync input) connectors (BNC)

Input a sync signal.

Use one connector for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

④ G/Y/TEST INPUT connectors (BNC)**⑤ R/R-Y INPUT connectors (BNC)****⑥ B/B-Y INPUT connectors (BNC)**

Input RGB video signals, component signals or a composite test signal. The signal format can be selected with the FORMAT button in the drawer. Use one connector of each pair for input and the other for loop-through output.

When the loop-through output is not used, attach a 75-ohm terminator.

⑦ DECODER OUTPUT connectors (BNC)

Output RGB or component (Y, R-Y, B-Y) outputs decoded from the composite (VIDEO A, VIDEO B or TEST) or component signals being displayed on the screen with the BKM-1440 RGB/component adaptor installed.

The RGB or component outputs are selected with the S1 selector on the BF board of the BKM-1440 kit.

To provide RGB output, set the S1 selector to the upper position.

To provide component output, set it to the lower position.

Notes

- The DECODER OUTPUT connectors do not provide the correct RGB outputs when RGB signals are displayed on the screen. To obtain the correct RGB outputs, use the loop-through outputs of the R, G and B INPUT connectors.
- The outputs obtained from noncomposite signals are also noncomposite. Supply a sync signal from the EXT SYNC INPUT connector when required.
- The output signals are affected by the CHROMA, PHASE and APERTURE controls and MATRIX switch.
- The color killer circuit is not activated for output signals.

⑧ REMOTE connector

Connect to an external control device using the supplied 10-pin connector.

To enter remote control mode, press the LOCAL/REMOTE button in the drawer so that the associated lamp lights.

The input mode and the pin assignment can be set through the REMOTE menu operation.

See "1-4-6. Assigning the Remote Control Functions."

⑨ Ground terminal

Connect to the system ground, when required.

⑩ Voltage selector

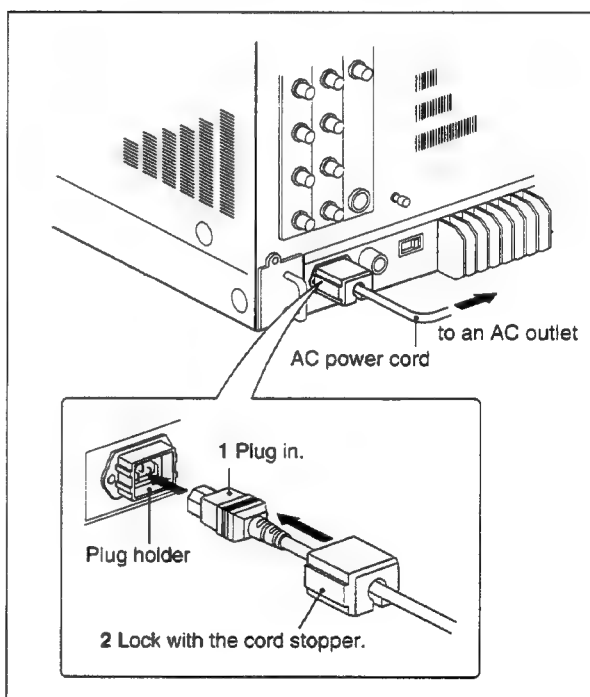
Set to 100-120 V AC for the BVM-1916 or 220-240 V AC for the BVM-2016P.

⑪ Fuse

Use a 4A fuse for the BVM-1916 or a T2A fuse for the BVM-2016P.

⑫ AC IN connector

Connect the supplied AC power cord here and secure it with the supplied cord stopper.

**NOTICE**

THIS NOTICE IS APPLICABLE FOR THE USA ONLY.

If shipped to the USA, use the UL LISTED power cord specified below for 220 - 240 V AC operation.

DO NOT USE ANY OTHER POWER CORD.

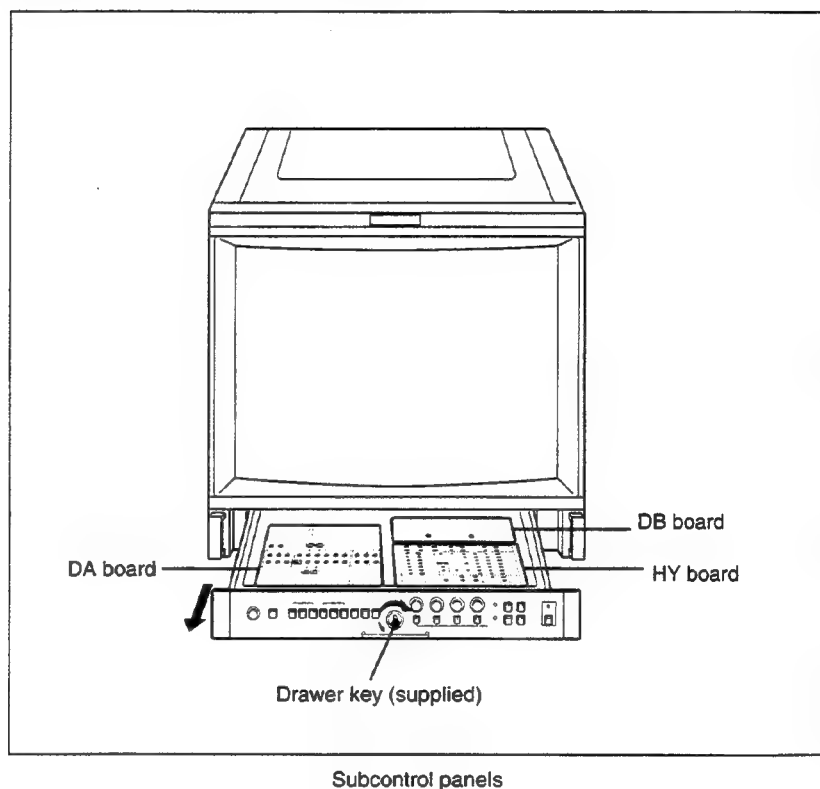
Plug cap	Tandem blade with ground pin
Cord	Type SJT, three 16 or 18 AWG Wires
Length	Maximum 15 feet
Rating	Minimum 10 A, 250 V AC

Section 1 Operation

1-3-3. Subcontrol Panels inside the Drawer

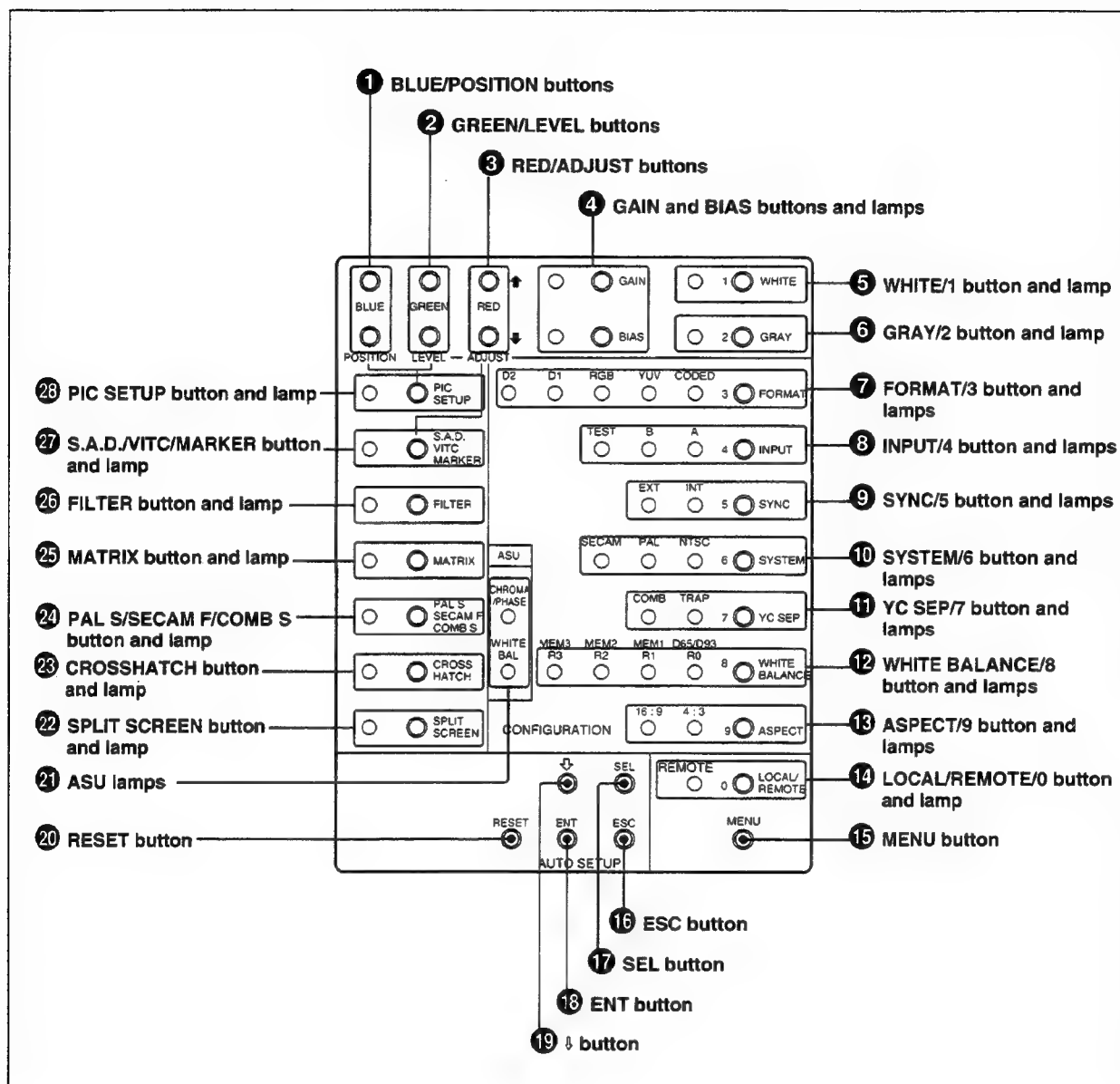
Insert the supplied drawer key into the keyhole of the drawer lock, turn it 90° clockwise and pull the drawer out.

Adjust the button and controls on the subcontrol panels when the monitor is fully warmed up. Warm-up time will be at least 30 minutes after the power has been turned on.



For turning the controls on the DA and DB boards, use the supplied screwdriver.

HY board (input configuration, menu and auto setup operation section)



HY board

1 BLUE/POSITION buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the blue signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the position of the input signal checking zone.

2 GREEN/LEVEL buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the green signal.

When adjusting the black level (the PIC SETUP lamp is lit), use them to adjust the brightness of the black reference area.

Section 1 Operation

③ RED/ADJUST buttons

When adjusting white balance (the GAIN or BIAS lamp is lit), use these buttons to adjust the red signal.

When the safe area is displayed (the S.A.D./VITC/MARKER lamp is lit), use them to adjust the safe area size.

④ GAIN and BIAS buttons and lamps

When adjusting the white balance, select the adjustment items.

BIAS: Adjust the white balance at the lowlight and brightness of the screen.

GAIN: Adjust the white balance at the highlight and contrast of the screen.

For the adjustments, use the BLUE/POSITION, GREEN/LEVEL and RED/ADJUST buttons.

⑤ WHITE/1 button¹⁾ and lamp

When adjusting the white balance at the highlight, press this button so that the lamp lights. The internal 100% white signal is displayed on the screen. To turn off the signal, press the button again.

⑥ GRAY/2 button¹⁾ and lamp

When adjusting the white balance at the lowlight, press this button so that the lamp lights. The internal gray signal is displayed on the screen. To turn off the signal, press the button again.

⑦ FORMAT/3 button¹⁾ and lamps

Select the signal format according to the signal to be monitored. Press this button so that the lamp of the appropriate format lights.

CODED: For monitoring NTSC, PAL or SECAM signal with the decoder board (BC, BD, BE or BM) installed.

YUV: For monitoring Y/R-Y/B-Y component signals.

RGB: For monitoring RGB signals.

D-1: For monitoring D-1 format component signals.

D-2: For monitoring a D-2 format composite signal.

⑧ INPUT/4 button¹⁾ and lamps

When monitoring a composite signal, select the input connector.

Press this button so that the lamp of the appropriate connector lights.

A: For monitoring the signal connected to the VIDEO A INPUT connector.

B: For monitoring the signal connected to the VIDEO B INPUT connector.

TEST: For monitoring the test signal connected to the G/Y/TEST connector.

⑨ SYNC/5 button¹⁾ and lamps

Select the sync mode. Press this button so that the lamp of the appropriate mode lights.

INT (internal sync mode): The unit operates in synchronization with the sync signal of the composite signal being displayed on the screen.

EXT (external sync mode): The unit operates in synchronization with the sync signal supplied from the EXT SYNC INPUT connector.

⑩ SYSTEM/6 button¹⁾ and lamps

When monitoring a composite signal or a signal decoded with a decoder board (BC, BD, BE or BM), select the color system according to the signal to be monitored. Press this button so that the lamp of the appropriate system lights.

NTSC: For monitoring a signal of the NTSC color system.

PAL: For monitoring a signal of the PAL color system.

SECAM: For monitoring a signal of the SECAM color system.

Note

If the decoder board for the selected color system has not been installed:

- The picture does not appear when the FILTER lamp is lit (FILTER ON).
- The picture is displayed in monochrome when the FILTER lamp is not lit (FILTER OFF).

1) These buttons also function as numeric keys when specifying the password.
See "1-4-5. Changing and Applying the Password."

11 YC SEP(Y/C separation filter)/7 button¹⁾ and lamps

For NTSC or PAL signal, select the filter to be used for Y/C separation. Press the button so that the lamp of the appropriate filter lights.

COMB: To use the comb filter with the comb filter board (BB or BT) installed.

TRAP: To use the built-in trap filter.

Note

When the appropriate comb filter board has not been installed, the trap filter is activated regardless of the setting with this button.

12 WHITE BALANCE/8 button¹⁾ and lamps

Select the white balance and picture levels stored in the respective registers. Press this button so that the lamp of the appropriate register lights.

At the factory, the white balance for D65 has been stored in all the registers.

D65/D93 R0: To use the white balance and picture levels stored in register 0.

MEM 1 R1: To use the white balance and picture levels stored in register 1.

MEM 2 R2: To use the white balance and picture levels stored in register 2.

MEM 3 R3: To use the white balance and picture levels stored in register 3.

For details, see "1-4. Menu Operations."

13 ASPECT/9 button¹⁾ and lamps

Select the aspect ratio of the picture to be monitored. Press this button so that the lamp of the appropriate ratio lights.

4:3: For the 4:3 aspect

16:9: For the 16:9 aspect.

14 LOCAL/REMOTE/0 button¹⁾ and lamp

To enable the monitor to be controlled from an external control device connected to the REMOTE connector on the rear panel, press this button so that the lamp lights (REMOTE mode). To disable the remote control (LOCAL mode), press the button again.

For the remote control functions, see "1-4-6. Assigning the Remote Control Functions."

15 MENU button

Press to initiate menu operations. The initial menu is displayed.

16 ESC (escape) button

Press to quit menu or auto setup operations.

17 SEL (select) button

Press to set the monitor to color temperature selection mode in auto setup operations. In color analyzer mode, select the memory position of the probe connected to the AUTO SETUP PROBE connector.

For details, refer to the operation and maintenance manual of the BKM-2056 auto set-up adaptor.

18 ENT (enter) button

Press to proceed to the next step during menu or auto setup operation and save the data.

19 ↓ (cursor) button

For selecting menu options displayed on the screen in menu or auto setup operations. Each time this button is pressed, the cursor moves downwards and, if at the bottom, jumps to the top.

20 RESET button

Press to reset an auto setup operation.

21 ASU (automatic setup) lamps

CHROMA/PHASE: Lights when the automatic chroma and phase adjustment is completed with AUTO CHROMA/PHASE in auto setup operations. The lamp goes off when MANUAL is selected on the SELECT MONITOR MEM menu in auto setup operations.

WHITE BAL: Lights when one of the color temperature to be transferred to the monitor by the auto white balance adjustment is selected on the SELECT MONITOR MEM menu in auto setup operations. When this lamp is lit, the color temperature selection on the SELECT MONITOR MEM menu can be performed using the WHITE BALANCE/8 button.

1) These buttons also function as numeric keys when specifying the password.

See "1-4-5. Changing and Applying the Password."

Section 1 Operation

22 SPLIT SCREEN button and lamp

To display the lower half of the picture in monochrome mode, press this button so that the lamp lights. Press this button again to resume the normal picture.

23 CROSSHATCH button and lamp

To display the internal crosshatch pattern for convergence adjustment, press this button so that the lamp lights.

The crosshatch pattern is synchronized with the selected composite sync signal.

To turn off the pattern, press the button again.

24 PAL S/SECAM F/COMB S button and lamp

While monitoring a PAL signal, the demodulation mode of the the PAL system can be switched. When this button is pressed and the lamp lights, S (simple) mode is selected. By pressing the button to turn off the lamp, D (deluxe) mode is selected.

While monitoring a SECAM signal, the ID signal of the the SECAM system can be switched. When this button is pressed and the lamp lights, the F (field) signal is selected. By pressing the button to turn off the lamp, the L (line) signal is selected.

When the BKM-1412 NTSC comb filter is activated, the comb filter mode can be switched. When this button is pressed and the lamp lights, the S (simple) comb filter is selected. By pressing the button to turn off the lamp, the D (dynamic) comb filter is selected. (When the BKM-1411 NTSC comb filter is activated, the S (simple) comb filter is always selected regardless of the button setting.)

25 MATRIX button and lamp

Should normally be OFF (lamp not lit).

By pressing this button so that the lamp lights (ON), the matrix circuit is activated and the chromaticity of the displayed picture more closely approximates to that of "true" NTSC phosphors. To turn off the matrix circuit, press the button again.

26 FILTER button and lamp

To activate the comb or trap filter (selected with the YC SEP button) in MONO mode (MONO MODE switch on the front panel depressed), press this button so that the lamp lights.

To deactivate the filter for a wider frequency range, press the button again.

Note

In AUTO mode (the MONO MODE switch released), the filter is always activated for color signals regardless of the setting with this button.

27 S.A.D.(safe area display)/VITC/MARKER button and lamp

When the safe area is displayed with the BQ board (BKM-1470 safe area display) installed, the adjustment of the safe area size can be enabled.

When the BL board (BKM-1460 VITC adaptor) has been installed, the VITC display can be turned on and off.

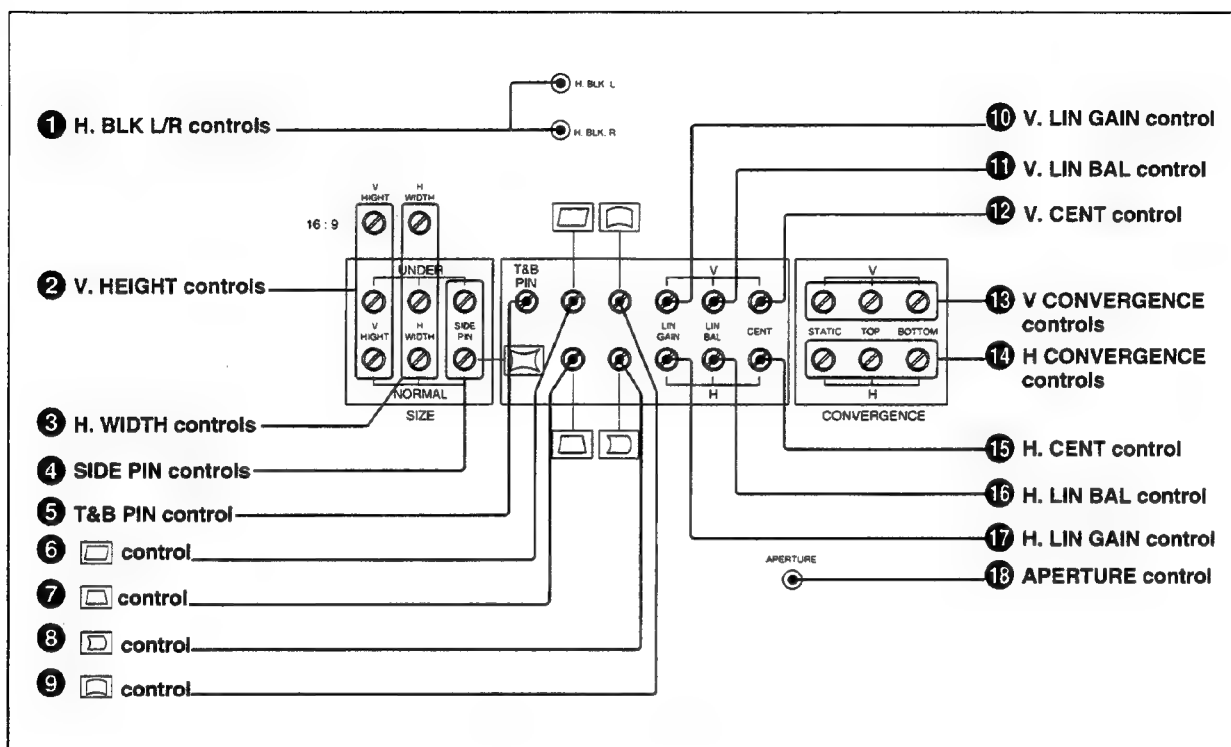
28 PIC SETUP (picture setup) button and lamp

Use to match the black reference of the monitor with the black level of the input signal to be monitored.

By pressing this button so that the lamp lights, a vertical picture band and the black reference of the monitor are displayed on the screen for easy level comparison.

See "1-5-2. Black Level Adjustment."

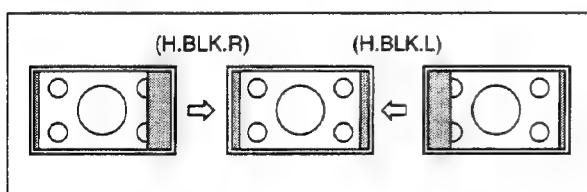
DA board



DA board

1 H. BLK. L/R (horizontal blanking left/right) controls

Adjust the width of the horizontal blanking at both sides of the screen.



2 V. HEIGHT (vertical height) controls

Adjust the height of the picture. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

3 H. WIDTH (horizontal width) controls

Adjust the horizontal width of the picture. Use the NORMAL control for the 4:3-aspect normal picture, the UNDER control for the 4:3-aspect underscanned picture and the 16:9 control for the 16:9-aspect picture.

4 SIDE PIN (pincushion) controls

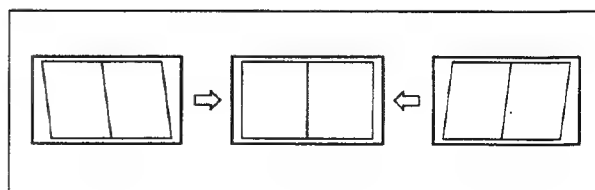
Correct the side pincushion distortion. Use the NORMAL control for the 4:3-aspect normal picture and the UNDER control for the 4:3-aspect underscanned picture.

5 T&B PIN (top and bottom pincushion) distortion control


Correct the top and bottom pincushion distortion.

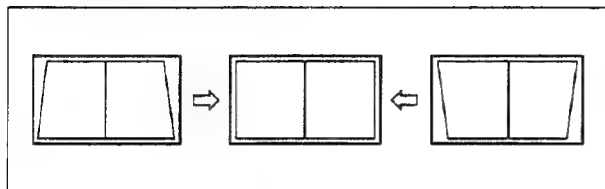
6 (parallelogram distortion) control


Correct the right angled distortion of the deflection yoke.

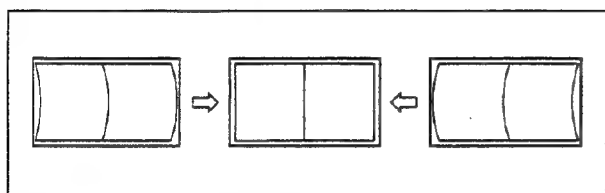



Section 1 Operation

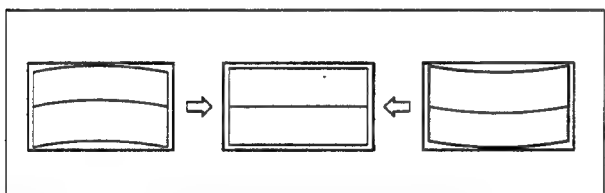
- 7**  **(side pincushion tilt) control**
Adjust the phase of the side pincushion distortion.



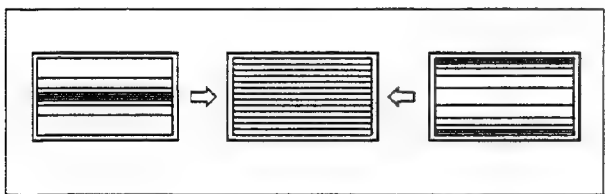
- 8**  **(horizontal centering linearity) control**
Adjust the horizontal linearity at the center of the picture.



- 9**  **(top and bottom pincushion balance) control**
Adjust the distortion at the center (X axis) of the picture.

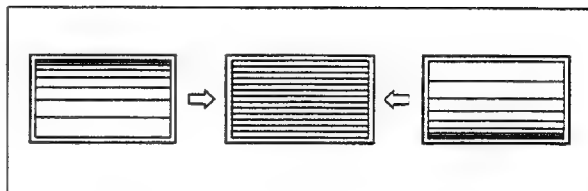


- 10** **V. LIN GAIN (vertical linearity gain) control**
Adjust the vertical linearity of the picture.




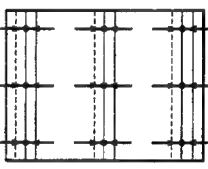
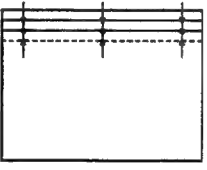
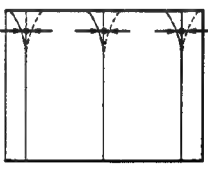
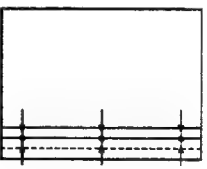
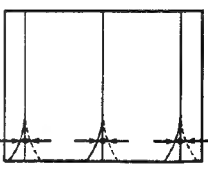
- 11** **V. LIN BAL (vertical linearity balance) control**

Adjust the balance of the vertical (Y axis) linearity of the picture.



- 12** **V. CENT (vertical centering) control**
Adjust the vertical position of the picture.

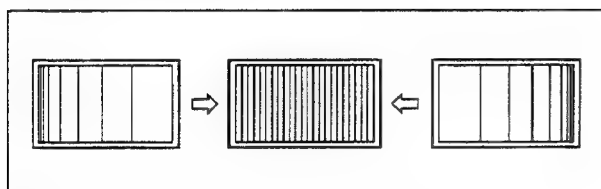
- 13** **V (vertical) CONVERGENCE controls**
14 **H (horizontal) CONVERGENCE controls**
Adjust the vertical (Y axis) or horizontal (X axis) convergence of corresponding portion of the screen as follows.

	V (vertical)	H (horizontal)
STATIC		
TOP		
BOTTOM		

- 15** **H. CENT (horizontal centering) control**
Adjust the horizontal position of the picture.

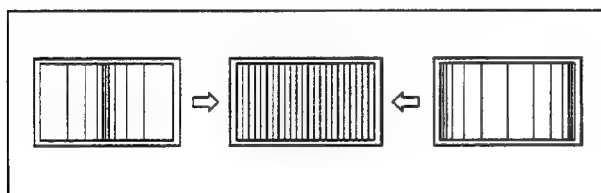
16 H. LIN BAL (horizontal linearity balance) control

Adjust the balance of the horizontal (x axis) linearity of the picture.



17 H. LIN GAIN (horizontal linearity gain) control

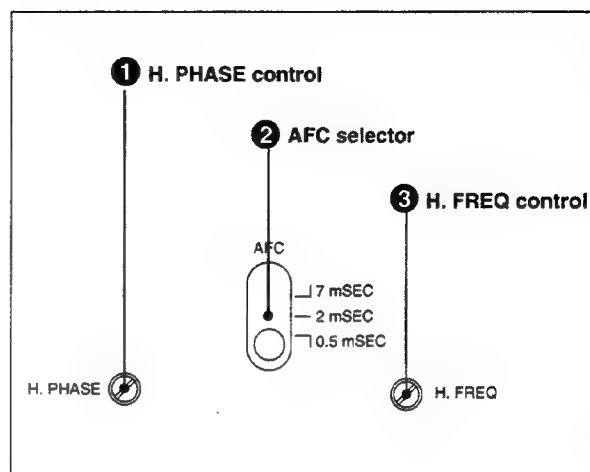
Adjust the horizontal linearity of the picture.



18 APERTURE control

Adjust the frequency response when the APERTURE switch on the front panel is depressed.

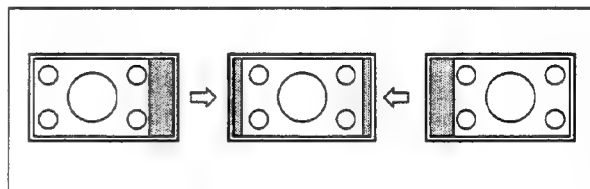
DB board (H.V. oscillator section)



DB board

1 H. PHASE (horizontal phase) control

Adjust the horizontal position of the picture.



2 AFC (automatic frequency control) selector

Select the AFC time constant.

0.5 mSEC (fast): This mode is fast enough to compensate for VTR jitter. Set to this position to obtain a stable playback picture from a VTR.

2 mSEC (normal): Normally set to this position.

7 mSEC (slow): This mode is slow enough to display the time base instability introduced by mechanical jitter in the VTR playback signal.

3 H. FREQ (oscillator) control

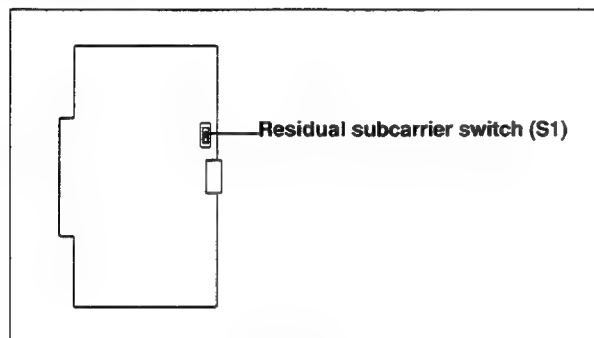
Adjust the free-run horizontal frequency.

Section 1 Operation

1-3-4. Switches inside the Cabinet

To access to the switches on the boards inside the cabinet, see Section 2.

BJ board



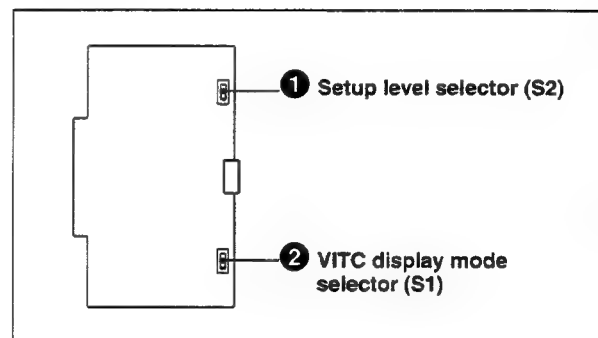
BJ board

Residual subcarrier switch (S1)

This switch is factory-preset to the lower position (OFF).

Normally there will be no residual subcarrier in input video signals. However, if a residual subcarrier is present, this may affect the display. Set this switch to the upper position (ON) to check if a residual subcarrier is present. If it is present in the incoming signal, color shift appears in the picture.

BH board



BH board

1 Setup level selector (S2)

Select the setup level.

0 IRE: The setup level is 0%.

AUTO: The setup level set through the COMPONENT OFFSET or NTSC OFFSET option of the MONITOR CONFIG menu is obtained.

See "1-4-7. Defining the Monitor Configuration."

7.5 IRE: The setup level is 7.5%.

The 0% setup levels can be varied with the RV1 control and 7.5% level with the RV2 control in a range from -2.5% through +12.5%.

2 VITC display mode selector (S1)

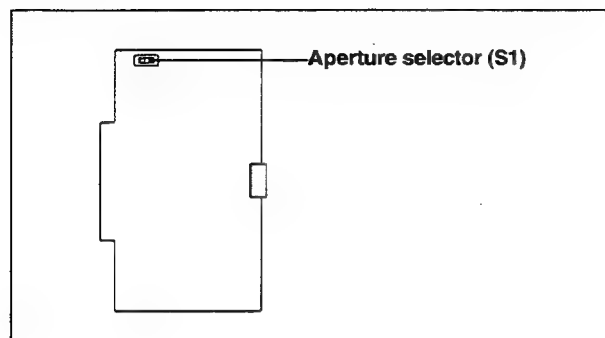
Use to invert the character and background colors for VITC display.

Upper position: Factory-preset position. The VITC is displayed in white characters on a black background.

Lower position: The VITC is displayed in black characters on a white background.

For details, see the operation and maintenance manual of the BKM-1460 VITC adaptor.

BG board



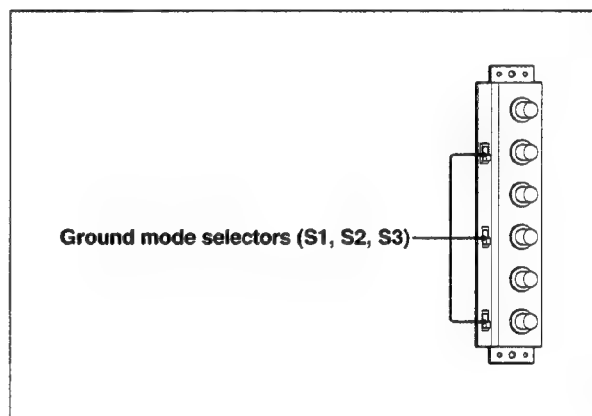
BG board

Aperture selector (S1)

Select the boost frequency, 4.5 MHz or 6.5 MHz, for aperture correction. This selector is factory-preset to 4.5 MHz.

QA and QB boards

The QA board is located behind the VIDEO A, VIDEO B and EXT SYNC INPUT connector panel and the QB board is located behind the R/R-Y, G/Y/TEST and B/B-Y INPUT connector panel. To access these boards, remove the INPUT connector panels, referring to Section 2.



QA and QB boards

Ground mode selectors (S1, S2, S3)

The selectors on the QA board correspond to the VIDEO A, VIDEO B or EXT SYNC INPUT connectors and those on the QB board correspond to the R/R-Y, G/Y/TEST or B/B-Y connectors, respectively.

S (nonfloating): Factory-preset position.

Normally keep the selectors at this position.

F (floating): When there is hum in the input signal to be monitored, set to this position. Common mode noise will be rejected.

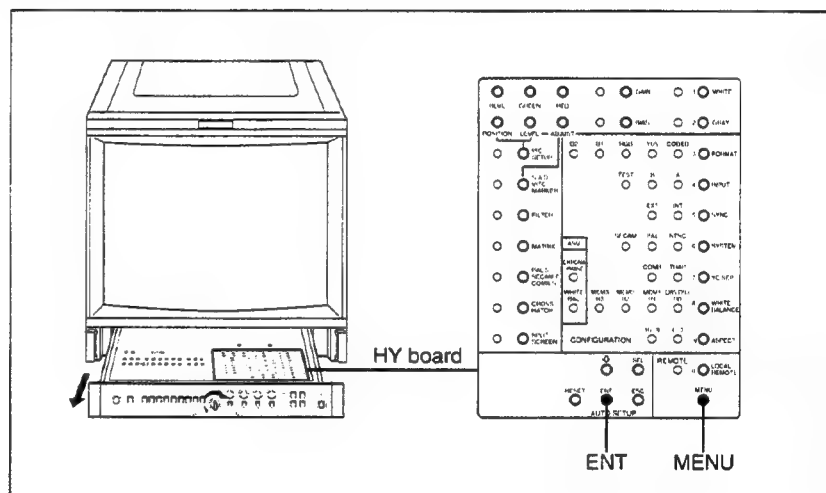
Section 1 Operation

1-4. Menu Operations

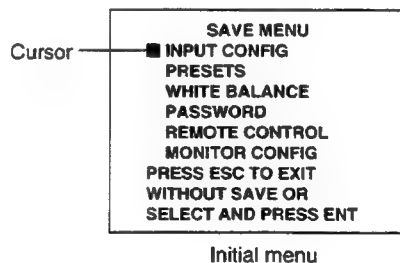
The menu operations permit the various monitor requirements to easily be set by following messages displayed on the screen.

1-4-1. Starting with the Menu Operations

For the menu operations, use the buttons on the HY board in the drawer and some switches and controls on the front panel.



Pressing the MENU button displays the following initial menu showing the items which can be set through the menu operations.



INPUT CONFIG (input configuration): To assign input signals to INPUT selectors 1 to 4 on the front panel.

PRESETS: To adjust the preset values for the phase, chroma, contrast, brightness, and picture setup (black reference) levels.

WHITE BALANCE: To adjust the white balance.

PASSWORD: To specify and activate/deactivate the password.

REMOTE CONTROL: To assign the remote control functions.

MONITOR CONFIG (monitor configuration): To specify operating conditions of the monitor, such as the optional boards to be used and signal setup levels, and to restore the factory-set menu data.

To select a menu option

Move the cursor with the \downarrow button to the line of the desired menu option and press the ENT button.

Pressing the \downarrow button moves the cursor downward and, if at the bottom, to the top.

To cancel the menu operation on the way

Press the ESC button.

At any level of the menu operations, pressing the ESC button cancels the operations without changing any data and restores normal status.

1-4-2. Setting the Input Configuration

At the factory, the following input signals are assigned to INPUT selectors 1 to 4 on the front panel.

Factory-set configuration

Signal	INPUT selectors			
	1	2	3	4
FORMAT	CODED	CODED	COMPONENT	RGB
INPUT	A	B	—	—
SYNC	INT	INT	INT	INT
SYSTEM ^{a)}	NTSC/PAL	NTSC/PAL	—	—
ASPECT	4 : 3	4 : 3	4 : 3	4 : 3
YC SEP ^{b)}	COMB	COMB	—	—

a) NTSC for the BVM-1916 and PAL for the BVM-2016P.

b) Only for BVM-1916. The INPUT selectors 1 and 2 on the BVM-2016P have been set to TRAP.

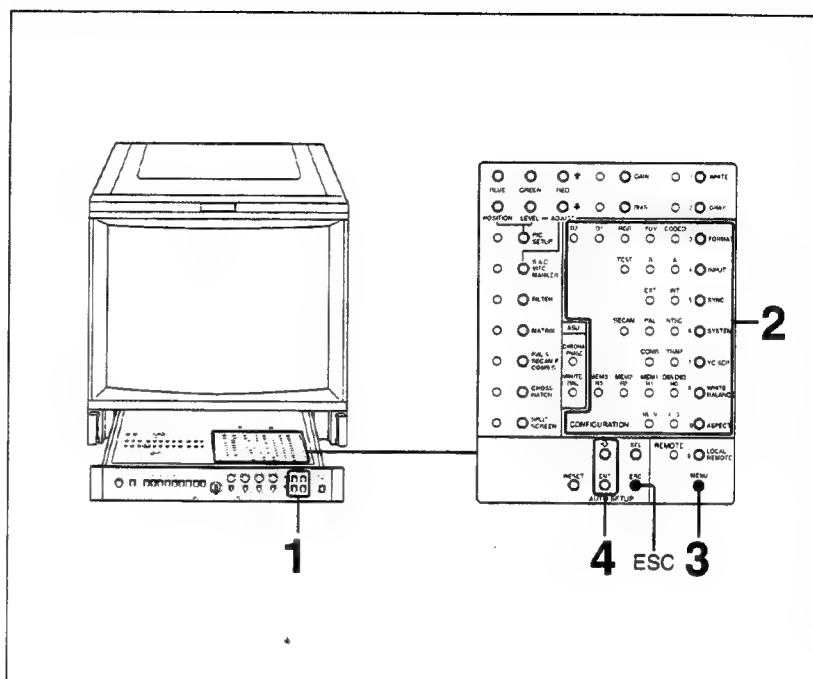
Using the CONFIGURATION buttons on the HY board in the drawer, these requirements of the input signals (input configuration) can be changed as desired and stored in memory through the INPUT CONFIG menu operation.

The stored configuration is always obtained when the assigned INPUT selector is pressed.

When the change is not stored through the menu operation, the input configuration returns to the previous status when another INPUT selector is pressed.

Section 1 Operation

Operation



- 1** Press one of the INPUT selectors on the front panel.
- 2** Using the following CONFIGURATION buttons in the drawer, set the input configuration for the INPUT selector selected in step 1. Press the buttons so that the appropriate lamps light.
 - FORMAT:** Select the signal format (CODED, YUV, RGB, D-1 or D-2).
 - INPUT:** Select the input connector A, B or TEST when you select CODED for FORMAT, or A or B when you select D-1 or D-2 for FORMAT.
 - SYNC:** Select the sync mode (INT or EXT).
 - SYSTEM:** Select the color system (NTSC, PAL or SECAM) when you select CODED or D-2 for FORMAT.
 - YC SEP:** Select the filter when you select NTSC or PAL for the color system.
 - WHITE BALANCE:** Select the register (R0, R1, R2 or R3) on which the desired white balance has been stored.
See "1-4-4. Selecting the White Balance."
 - ASPECT:** Select the picture aspect (4:3 or 16:9).
- 3** When the settings are completed, press the MENU button. The initial menu is displayed.

-
- 4** Should the cursor on the initial menu not be located at INPUT CONFIG, press the ↓ button until it returns to INPUT CONFIG, and press the ENT button.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

The input configuration set in step 2 for the INPUT selector selected in step 1 is now stored in memory.

The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

Repeat this procedure for the other INPUT selectors as desired.

To cancel the operation

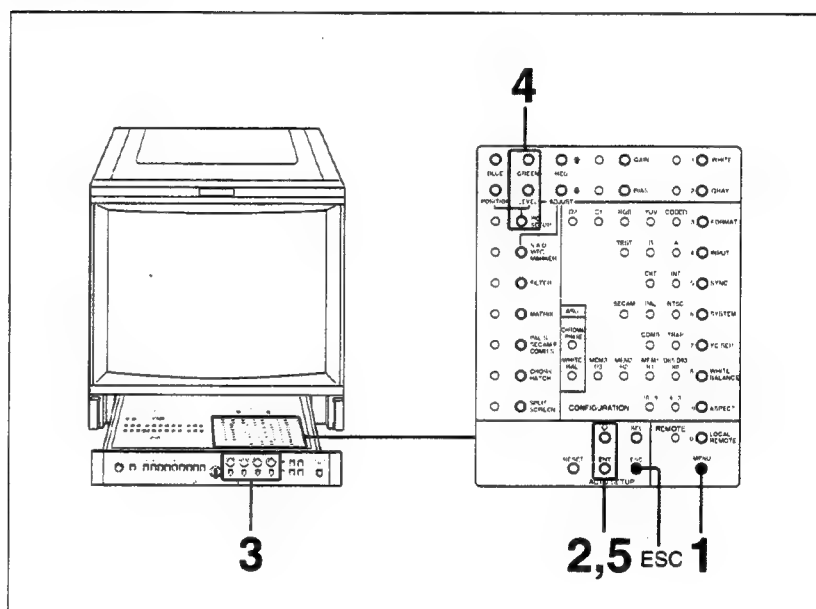
Press the ESC button before pressing the ENT button in step 4.

Section 1 Operation

1-4-3. Presetting the Picture Levels

The four sets of the phase, chroma, brightness, contrast, and picture setup (black reference) levels can be set and stored in Registers R0 to R3 through the PRESETS menu operation.

Operation



- 1** Press the MENU button.
The initial menu is displayed.
- 2** Press the ↓ button until the cursor reaches PRESETS, then press the ENT button.
The SAVE PRESETS menu is displayed.

SAVE PRESETS	
■ TEXT ON/OFF	
DATA REGISTER R0 *	
DATA REGISTER R1	
DATA REGISTER R2	
DATA REGISTER R3	
PHASE 100	BRIGHT 100
CHROMA 100	CONTRAST 100
PICTURE SETUP LEVEL 100	
SELECT AND PRESS ENT	

An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

- 3** Depress the PHASE, CHROMA, BRIGHTNESS and CONTRAST MANUAL switches and turn the respective controls so that the desired levels are obtained.
- 4** Press the PIC SETUP button so that the associated lamp lights and adjust the setup level for the picture by pressing the LEVEL buttons.

Note

The adjustments in steps 3 and 4 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.

To adjust while observing the picture on the screen, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE PRESETS menu disappears.

For the picture setup level, follow the procedure in "1-5-2. Black Level Adjustment."

To return to the SAVE PRESETS menu, press the ENT button again.

- 5** Move the cursor to the register in which the set levels are to be stored and press the ENT button.

The levels set in steps 3 and 4 are now stored in the register selected in step 5.

The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

Repeat this procedure for the other registers as desired.

To cancel the operation

Press the ESC button before pressing the ENT button in step 5.

1-4-4. Selecting the White Balance

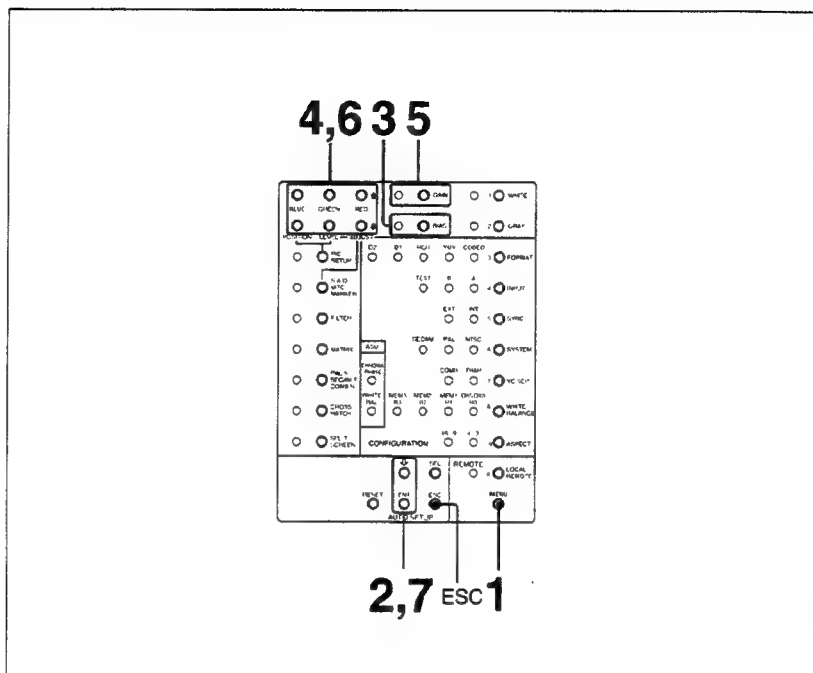
The four settings for white balance can be stored in Registers R0 to R3. At the factory, the setting for D65 has been stored in all the registers

Note

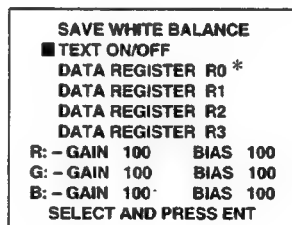
The settings for white balance are stored in combination with the picture levels set through the PRESETS menu operation in the same Registers R0 through R3.

Section 1 Operation

Operation



- 1** Press the MENU button.
The initial menu is displayed.
- 2** Press the ↓ button until the cursor reaches WHITE BALANCE, then press the ENT button.
The SAVE WHITE BALANCE menu is displayed.



An asterisk indicates the register which is currently selected with the WHITE BALANCE button. The levels stored in this register are displayed as numerical values on the lower half of the menu display.

Note

If the message "PLEASE ENTER PASSWORD" is displayed, enter the password.

See "1-4-5. Changing and Applying the Password."

- 3** Press the BIAS button.
The associated lamp lights.
- 4** Adjust the R, G and B bias levels by pressing the RED, GREEN and BLUE buttons.
- 5** Press the GAIN button.
The associated lamp lights.
- 6** Adjust the R, G and B signal gain levels by pressing the RED, GREEN and BLUE buttons.

Note

These adjustments in steps 3 through 6 can be precisely performed while observing the numeric level indications (0 through 200, centering with 100) on the lower half of the menu display.

To adjust while observing the picture on the screen, set the cursor to TEXT ON/OFF and press the ENT button, and the SAVE WHITE BALANCE menu disappears.

Then, adjust the white balance by following the procedure in "1-5-1. White Balance Adjustment."

To return to the SAVE WHITE BALANCE menu, press the ENT button again.

- 7** Move the cursor to the register in which the set white balance is to be stored and press the ENT button.

The white balance set in steps 3 through 6 is now stored in the register selected in step 7.

The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.

Repeat the above procedure for the other registers as desired.

To cancel the operation

Press the ESC button before pressing the ENT button in step 7.

Section 1 Operation

1-4-5. Changing and Applying the Password

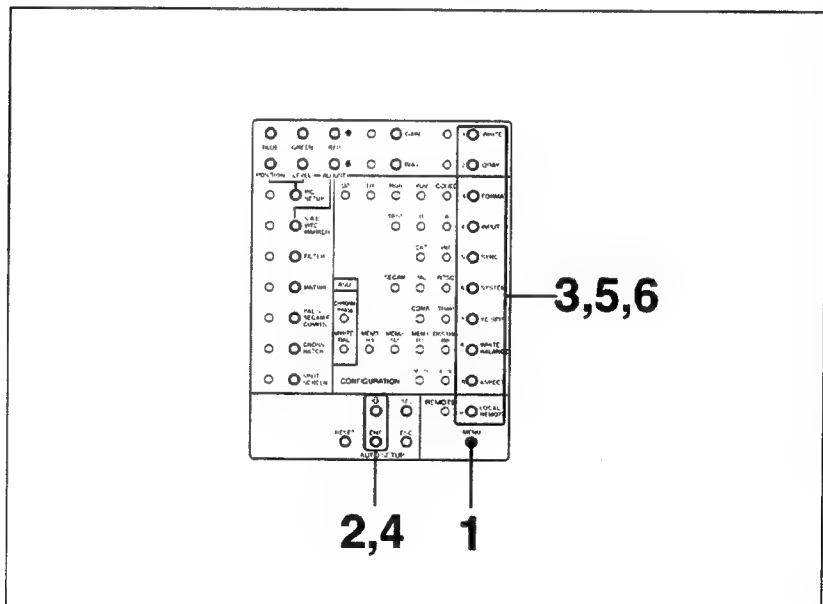
The password can be specified and applied to the desired menu option to prohibit the menu settings from being changed without permission. The password can be any desired four-digit number, which is entered by using the function buttons having additional numeric indications on the HY board.

The message **"PLEASE ENTER PASSWORD"** is displayed when you try to select the options for which the password has been applied, from the initial menu.

If an incorrect password is entered or the password is not entered within about 5 seconds after the above message is displayed, the message **"INCORRECT ENTRY"** is momentarily displayed and the menu operation is canceled.

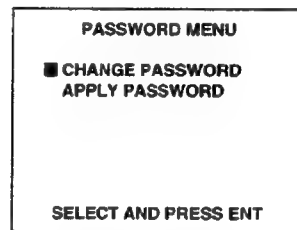
To change the password

"9999" has been specified for the password at the factory. Change it to your desired four-digit number as follows.



- 1 Press the MENU button.
The initial menu is displayed.

- 2** Press the \downarrow button until the cursor reaches PASSWORD, then press the ENT button.
The message "ENTER PASSWORD" is displayed.
- 3** Enter the current password (Factory-set: 9999).
The PASSWORD MENU is displayed.



- 4** Select the CHANGE PASSWORD option.
The message "ENTER NEW PASSWORD" is displayed.
- 5** Enter any desired four-digit number as your new password using the buttons labeled 0 to 9.
The message "PLEASE RE-ENTER NEW PASSWORD TO CONFIRM" is displayed.
- 6** Enter the new password again.
The message "PASSWORD CHANGED" is displayed and the new password is now valid.

Note

If an incorrect password is entered, "INCORRECT ENTRY. PASSWORD NOT CHANGED" is displayed and the menu operation is canceled.

To cancel the operation

Press the ESC button before re-entering the new password in step 6.

Section 1 Operation

To apply the password

The specified password can be activated/deactivated independently for each of the initial menu options and, with the BKM-2056 installed, the auto setup option.

- 1** Perform steps 1 through 3 mentioned in “To change the password.”
- 2** By pressing the ↓ button and then ENT button, select the APPLY PASSWORD option.
The APPLY PASSWORD menu is displayed.

APPLY PASSWORD	
■ INPUT CONFIG	NO
WHITE BALANCE	NO
PRESETS	NO
AUTO SETUP	NO
REMOTE CONTROL	NO
MONITOR CONFIG	NO
SAVE AND APPLY	
SELECT AND PRESS ENT	

NO is displayed for each option for which the password is not activated.

YES is displayed for each option for which the password is activated.

- 3** By pressing the ↓ button, move the cursor to the option for which the password application is to be changed.
- 4** Press the ENT button to change NO to YES or vice versa.
(Pressing the button toggles the YES/NO setting.)

Repeat steps 3 and 4 for the other options as desired.

- 5** When the password application setting is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The message “PASSWORD APPLIED” is momentarily displayed, and the monitor returns to normal status.

To cancel the operation

Press the ESC button before pressing the ENT button in step 5.

1-4-6. Assigning the Remote Control Functions

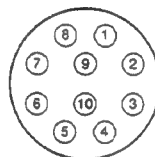
The remote control function is available either in STANDARD PARALLEL or CONFIGURE PARALLEL mode.

The mode change is achieved through the REMOTE CONTROL menu operation.

The SERIAL REMOTE option mode in the REMOTE CONTROL menu is provided for future use. If you inadvertently select it, cancel the REMOTE CONTROL menu by pressing the ESC button.

STANDARD PARALLEL mode

The remote control function is set to the STANDARD PARALLEL mode and the following functions are assigned to the pins of the REMOTE connector at the factory.



Pin assignment

Function			Pin No.						
INPUT	SYNC	MODE	1	2	3	4	5	6	7
A	INT	AUTO	O	O	-	O	-	-	-
		MONO	S	O	-	O	-	-	-
	EXT	AUTO	O	O	-	S	-	-	-
		MONO	S	O	-	S	-	-	-
B	INT	AUTO	O	S	-	O	-	-	-
		MONO	S	S	-	O	-	-	-
	EXT	AUTO	O	S	-	S	-	-	-
		MONO	S	S	-	S	-	-	-
VITC OFF			-	-	-	-	-	S	-
VITC HOLD			-	-	-	-	-	O	S
TALLY ON			-	-	S	-	-	-	-

S: Short-circuit with pin No.8

O: Open

-: Either S or O

The assigned function can be controlled by short-circuiting the corresponding pin with pin 8.

Note that pin 3 is fixed to TALLY and pin 8 is fixed to GND.

The remote control operations have priority over the respective buttons and switches of the monitor.

Section 1 Operation

CONFIGURE PARALLEL mode

The functions of the buttons or switches on the front panel or in the drawer listed below can be assigned to pins 1, 2 and 4 through 7, as desired.

Front panel

INPUT selectors 2 to 4 (input selection)

MONO MODE switch (AUTO/MONO mode switching)

HY board inside the drawer

WHITE button (ON/OFF)

SYNC button (INT/EXT sync mode switching)

YC SEP button (COMB/TRAP filter switching)

ASPECT button (16:9/4:3 picture aspect switching)

S.A.D./VITC/MARKER button (S.A.D. or VITC ON/OFF)

FILTER button (ON/OFF)

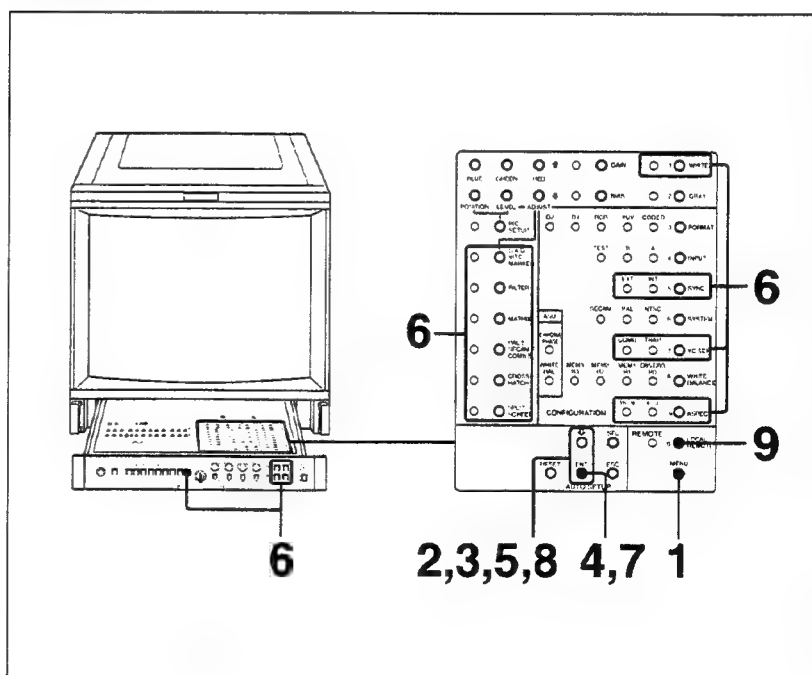
MATRIX button (ON/OFF)

PAL S/SECAM F/COMB S button (mode or type switching)

CROSSHATCH button (ON/OFF)

SPLIT SCREEN button (ON/OFF)

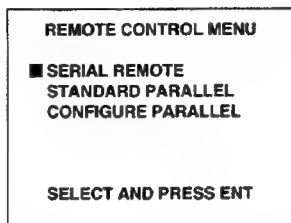
Operation



- 1 Press the MENU button to display the initial menu.

- 2** Move the cursor to REMOTE CONTROL and press the ENT button.

The REMOTE CONTROL MENU is displayed.

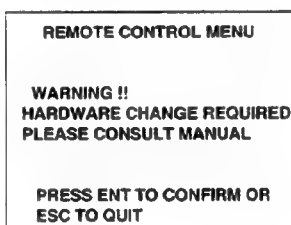


Note that SERIAL REMOTE is for future use.

- 3** To change the pin assignment of the REMOTE connector, move the cursor to CONFIGURE PARALLEL and press the ENT button.

To resume the factory-set pin assignment, move the cursor to STANDARD PARALLEL and press the ENT button. (For the factory-set pin assignment, see page 1-33.)

The following display appears.

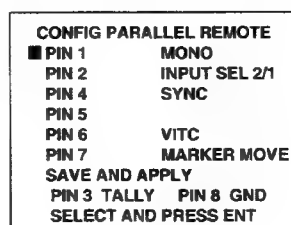


Hardware Change

When using STANDARD PARALLEL or CONFIGURE PARALLEL mode, the 8-pin connector must be connected to HY-4 of the HY board in the drawer. Although it must have been done at the factory, make sure that the connector is connected to HY-4 properly. If not, remove the connector from HY-2 and connect it to HY-4.

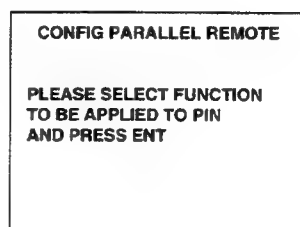
- 4** Press the ENT button again to confirm the mode change in step 3. When STANDARD PARALLEL has been selected in step 3, the selected mode is now activated and the monitor returns to normal status.

When CONFIGURE PARALLEL has been selected, the CONFIG PARALLEL REMOTE menu is displayed.



Section 1 Operation

- 5** Move the cursor with the \downarrow button to the pin whose assignment is to be changed, then press the ENT button.
The following message appears.



- 6** Press the button on the front panel or in the drawer (listed on page 1-34) whose function is to be assigned to the pin selected in step 5.
- 7** Press the ENT button.

Repeat steps 5, 6 and 7 for the other pins as desired.

- 8** When the pin assignment is completed, move the cursor to SAVE AND APPLY and press the ENT button.
The message "DATA SAVED" is momentarily displayed, and the monitor returns to normal status.
- 9** Press the LOCAL/REMOTE button to set the monitor to the remote control mode.

To cancel the operation

Press the ESC button before pressing the ENT button in step 8.

Notes

- When the INPUT selector 2, 3 or 4 is assigned to one of the REMOTE connector pins through CONFIGURE PARALLEL, the input signal for the assigned INPUT selector is selected by short-circuiting the pin to GND. In open status, the input signal of the INPUT selector 1 is selected.
- When two or more INPUT selectors are assigned to the REMOTE connector pins, be sure not to simultaneously short-circuit these pins to GND.

1-4-7. Defining the Monitor Configuration

In MONITOR CONFIG menu operation, the following operating conditions of the monitor can be defined.

OPTION INSTALLATION: To specify the installed optional boards.

D1 CONFIGURATION: To specify the system in which D-1 signals are to be received.

COMPONENT OFFSET: To set the setup level for component signals

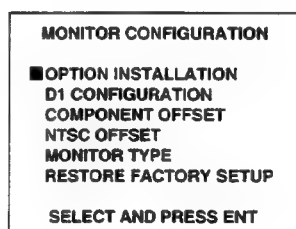
NTSC OFFSET: To set the setup level for NTSC signals.

MONITOR TYPE: To define the model of your monitor.

In addition, all the menu options you changed can be reset to the factory-set conditions using the **RESTORE FACTORY SETUP** option.

To start with the MONITOR CONFIG menu operation

- 1** Press the MENU button to display the initial menu.
- 2** Press the ↓ button until the cursor reaches MONITOR CONFIG, then press the ENT button.
The MONITOR CONFIGURATION menu is displayed.



Section 1 Operation

To specify the installed optional boards

- 1 Set the cursor to **OPTION INSTALLATION** on the **MONITOR CONFIGURATION** menu and press the **ENT** button.
The **OPTION INSTALLATION** menu 1 is displayed.

OPTION INSTALLATION 1	
■ AUTO SETUP	YES
D1 OPTION	YES
D2 OPTION	YES
NTSC DECODER	YES
NTSC COMB ADP	YES
PAL DECODER	YES
PAL COMB ADP	YES
OTHER OPTIONS	
SELECT AND PRESS ENT	

- 2 By pressing the \downarrow button, move the cursor to the board for which the **YES/NO** setting must be changed, and press the **ENT** button.
YES must be displayed for the installed board and **NO** for uninstalled boards. Pressing the **ENT** button toggles the **YES/NO** setting.

Repeat step 2 for the other boards as necessary.

- 3 Move the cursor to **OTHER OPTIONS** and press the **ENT** button.
The **OPTION INSTALLATION** menu 2 is displayed.

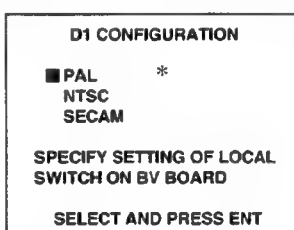
OPTION INSTALLATION 2	
■ PAL-M DECODER	YES
SECAM DECODER	YES
RGB/COMP O/P	YES
VITC BOARD	YES
SAFE AREA	YES
BLACK GENER	YES
OTHER OPTIONS	
SAVE AND APPLY	
SELECT AND PRESS ENT	

- 4 Set **YES/NO** for the boards listed in menu 2 in the same manner as with menu 1.
- 5 When the **YES/NO** setting is completed, move the cursor to **SAVE AND APPLY** and press the **ENT** button.
The message "**DATA SAVED**" is momentarily displayed and the monitor returns to normal status.

To specify the system in which D-1 signals are to be received

Before starting the following procedure, set D1 OPTION of the above OPTION INSTALLATION menu 1 to YES.

- 1 Move the cursor with the \downarrow button to D1 CONFIGURATION on the MONITOR CONFIGURATION menu and press the ENT button.
The D1 CONFIGURATION menu is displayed.

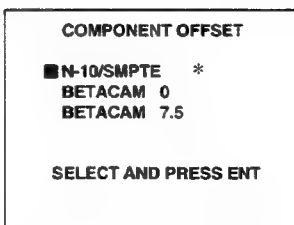


The asterisk indicates the current setting.

- 2 Move the cursor with the \downarrow button to the system matching setting of the local switch on the BV board.
- 3 Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To set the setup level for component signals

- 1 Move the cursor with the \downarrow button to COMPONENT OFFSET on the MONITOR CONFIGURATION menu and press the ENT button.
The COMPONENT OFFSET menu is displayed.



The asterisk indicates the current setting.

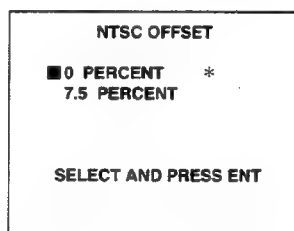
- 2 Move the cursor with the \downarrow button to the appropriate setup level.
N-10/SMPTE: When supplying the 100/0/100/0 component signals.
BETACAM 0: When supplying the 100/0/75/0 component signals.
BETACAM 7.5: When supplying the 100/7.5/75/7.5 component signals.

Section 1 Operation

- 3** Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To set the setup level of NTSC signals

- 1** Move the cursor with the ↓ button to NTSC OFFSET on the MONITOR CONFIGURATION menu and press the ENT button.
The NTSC OFFSET menu is displayed.

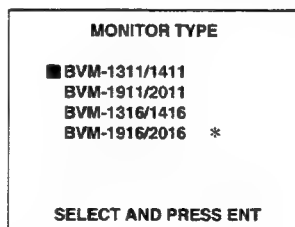


The asterisk indicates the current setting.

- 2** Move the cursor with the ↓ button to the appropriate setup level.
0 PERCENT: When supplying 0 IRE NTSC signals.
7.5 PERCENT: When supplying the 7.5 IRE NTSC signals.
- 3** Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor returns to normal status.

To define the model of your monitor

- 1** Move the cursor with the ↓ button to MONITOR TYPE on the MONITOR CONFIGURATION menu and press the ENT button.
The MONITOR TYPE menu is displayed.



The asterisk indicates the current setting.

- 2** Move the cursor with the ↓ button to the model name of your monitor.
- 3** Press the ENT button.
The message "DATA SAVED" is momentarily displayed and the monitor return to normal status.

To restore the factory setup

- 1 Move the cursor with the ↓ button to **RESTORE FACTORY SETUP** in the **MONITOR CONFIGURAITION** menu and press the **ENT** button.
The following message is displayed.

RESTORE FACTORY SETUP

**WARNING !!
THIS WILL DESTROY ALL
MANUALLY ENTERED DATA
AND CONFIGURATIONS**

**PRESS ENT TO CONFIRM
OR ESC TO QUIT**

- 2 Press the **ENT** button.
All the changed menu options return to the factory-set conditions.

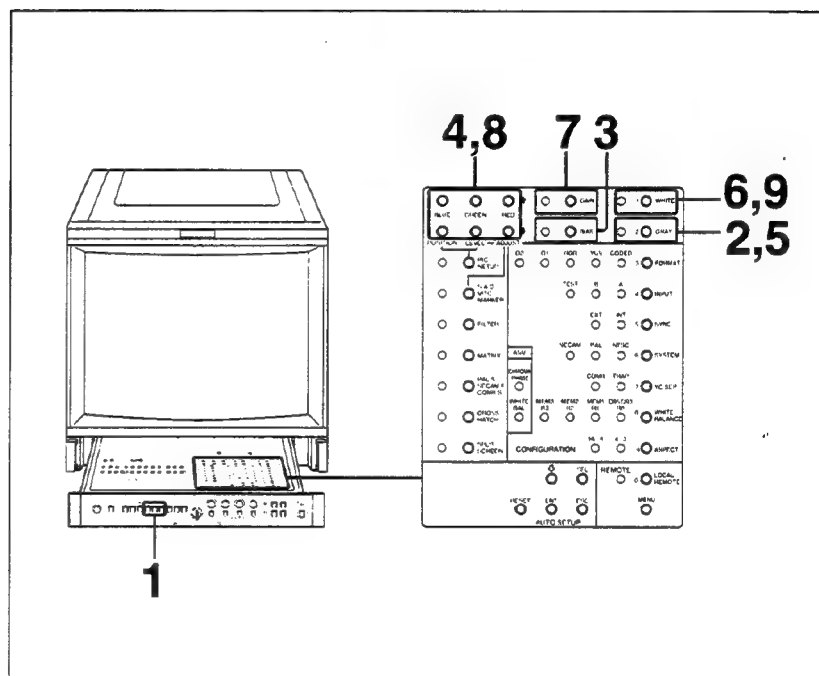
To cancel the restoration, press the **ESC** button before pressing the **ENT** button in step 2.

Section 1 Operation

1-5. Picture Adjustments

1-5-1. White Balance Adjustment

During the adjustment, turn the red green and blue beams on and off with the SCREEN switches on the front panel as required.



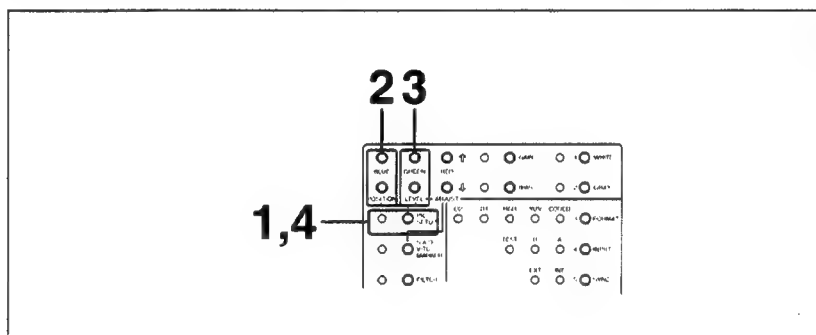
- 1** Display a test signal on the screen.
- 2** Press the GRAY button.
The associated lamp lights and the internal gray signal is displayed on the screen.
- 3** Press the BIAS button.
The associated lamp lights.
- 4** Adjust the white balance at the lowlight by pressing the BLUE, GREEN and RED buttons ↑ or ↓.
- 5** Press the GRAY button again.
The associated lamp goes off and the internal gray signal disappears.
- 6** Press the WHITE button.
The associated lamp lights and the internal 100% white signal is displayed on the screen

- 7** Press the GAIN button.
The associated lamp lights.
- 8** Adjust the white balance at the highlight by pressing the BLUE, GREEN and RED buttons ↑ or ↓.
- 9** When the adjustment is completed, press the WHITE button so that the lamp goes off and the white signal disappears.

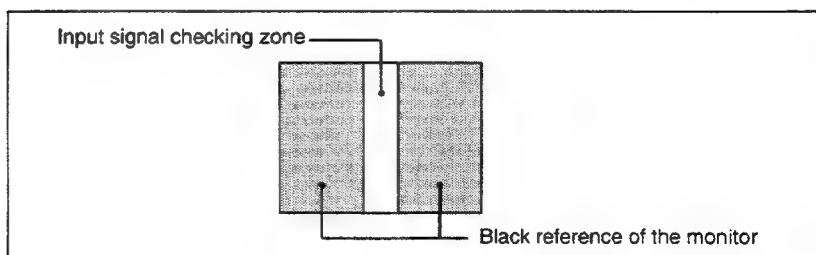
For white balance adjustment using a color analyzer or equivalent, see Section 2.

1-5-2. Black Level Adjustment

Match the black reference of the monitor with the black level of the input signal to be monitored.



- 1** Press the PIC SETUP button.
The associated lamp lights and a vertical picture band and the black reference of the monitor are displayed on the screen.



- 2** Press the POSITION buttons ↑ or ↓ to move the position of the picture band horizontally so that the black signal of the picture is located next to the black reference area.
- 3** Press the LEVEL buttons ↑ or ↓ to match the brightness of the black reference area with that of the input black signal.
- 4** Press the PIC SETUP button again.

Section 1 Operation

1-6. Specifications

General

System	BVM-1916: 525 lines per picture, 60 fields per second interlaced, NTSC BVM-2016P: 625 lines per picture, 50 fields per second interlaced, PAL
CRT	Fine Pitch Trinitron 0.4 mm aperture grille pitch, 90-degree deflection, 30.6 mm dia. in-line gun Effective picture size: 291 × 386 mm (h/w) (11 ¹ / ₂ × 15 ¹ / ₄ inches) 481 mm (19 inch) picture measured diagonally
Picture tube protection	EHT (Extremely High Tension) is shut off in the event of scan failure.
Warm up	30 min to meet specifications
Anode voltage	Properly adjusted HV 27 kV at zero beam current
Power consumption	Typical: 135 W Maximum: 175 W
Power requirements	BVM-1916: 100-120 V AC ±10%, 50/60 Hz BVM-2016P: 220-240 V AC ±10%, 50/60 Hz
Dimensions	448 × 455 × 584 mm (w/h/d) (17 ³ / ₄ × 18 × 23 inches) including projecting parts and controls
Mass	40.3 kg (88 lb 22 oz)

Inputs/outputs

Video inputs	BNC type (5 inputs with 5 loop-through outputs) VIDEO A/B, TEST, R/G/B: 0.7 Vp-p noncomposite vide signal or 1 Vp-p composite video signal, ±6 dB positive, high-impedance Y: Composite, 1.0 Vp-p±6 dB, high-impedance R-Y/B-Y: 0.7 Vp-p±6 dB, high-impedance
Sync input	EXT SYNC: BNC type (1 input with 1 loop-through output) 1 to 8 Vp-p negative, high-impedance
Input return loss	More than 46 dB (7 MHz with 75-ohm termination)
Hum rejection	Reduced by more than 50 dB Maximum hum: Less than 4 Vrms, where hum is applied to the monitor in floating ground mode

Video outputs	DECODER OUT: BNC type (3) Output decoded signals only when BKM-1440 is installed.
Remote control	REMOTE: 10-pin connector (1)
Auto set-up	AUTO SETUP PROBE: 12-pin connector (1)

Video signal

Luminance channel (RGB and composite signals)

Differential gain	Within 5% for a luminance from 0 to 103 cd/m ²
Differential phase	Within 5° for a luminance from 0 to 103 cd/m ²
Frequency response	Monochrome mode: 100 Hz to 6 MHz ± 1 dB (aperture correction at 0) Color mode: Trap or comb filter removes frequency in 3.58 MHz region (BVM-1916) or 4.43 MHz (BVM-2016P) region RGB mode: 100 Hz to 6 MHz ± 1 dB

Chrominance channel

Demodulation axis	R-Y, B-Y
Bandpass	1.3 MHz equiband
Subcarrier regeneration	$\pm 1^\circ$ (standard input signal)
Phase control range	More than $\pm 15^\circ$ (standard input signal)
Chroma gain control range	More than ± 6 dB

Chrominance/luminance

Time error	Less than 30 ns
Gain error	Less than 5%
Aperture correction	Adjustable continuously up to 6 dB boost at 4.5 MHz or 6.5 MHz (selectable)

DC restoration (RGB and composite signals)

Back porch type
Back porch level: Within 1% of peak luminance, 10% to 90% (average picture level)

Synchronization

AFC time constant	0.5 ms (fast), 2 ms (normal) or 7 ms (slow)
Line pull range/line hold range	More than ± 500 Hz at 0.5 ms time constant
Vertical blanking time	Normal: Within 1 ms Underscan: Within 0.8 ms
Horizontal retrace time	Within 10 μ s

Section 1 Operation

Picture performance

Normal scan	5% overscan of CRT effective screen area (adjustable range more than $\pm 15\%$)
Underscan	3% underscan of CRT effective screen area (adjustable range more than $\pm 15\%$)
Linearity	Within a central area bounded by a circle whose diameter equals the picture height, within 1% of the picture height, out of area 2%
Color temperature	D65, adjustable to other color temperatures
Nominal chromaticity coordinates	

BVM-1916: SMPTE C phosphor

	x	y
Red	0.630	0.340
Green	0.310	0.595
Blue	0.155	0.070

BVM-2016P: EBU standard phosphor

	x	y
Red	0.64	0.33
Green	0.29	0.60
Blue	0.15	0.06

Convergence error	Central area: Less than 0.5 mm Periphery: Less than 1.0 mm
Calibrated contrast	103 cd/m ² at peak white of standard 1 Vp-p signal
Raster size stability	Less than 1% picture height, 0% to 100% APL at 103 cd/m ² peak luminance
Scan delay	Horizontal: Approx. $\frac{1}{4}$ line Vertical: Approx. $\frac{1}{2}$ field
Resolution	More than 600 TV lines (center, at 103 cd/m ² luminance)

Environment

Operating temperature	0° C to 40° C (32° F to 104° F)
Optimum temperature range	20° C to 30° C (68° F to 86° F)
Humidity	0 to 90%
Altitude	Approx. 3,050 m (10,000 feet) max.

Supplied accessories

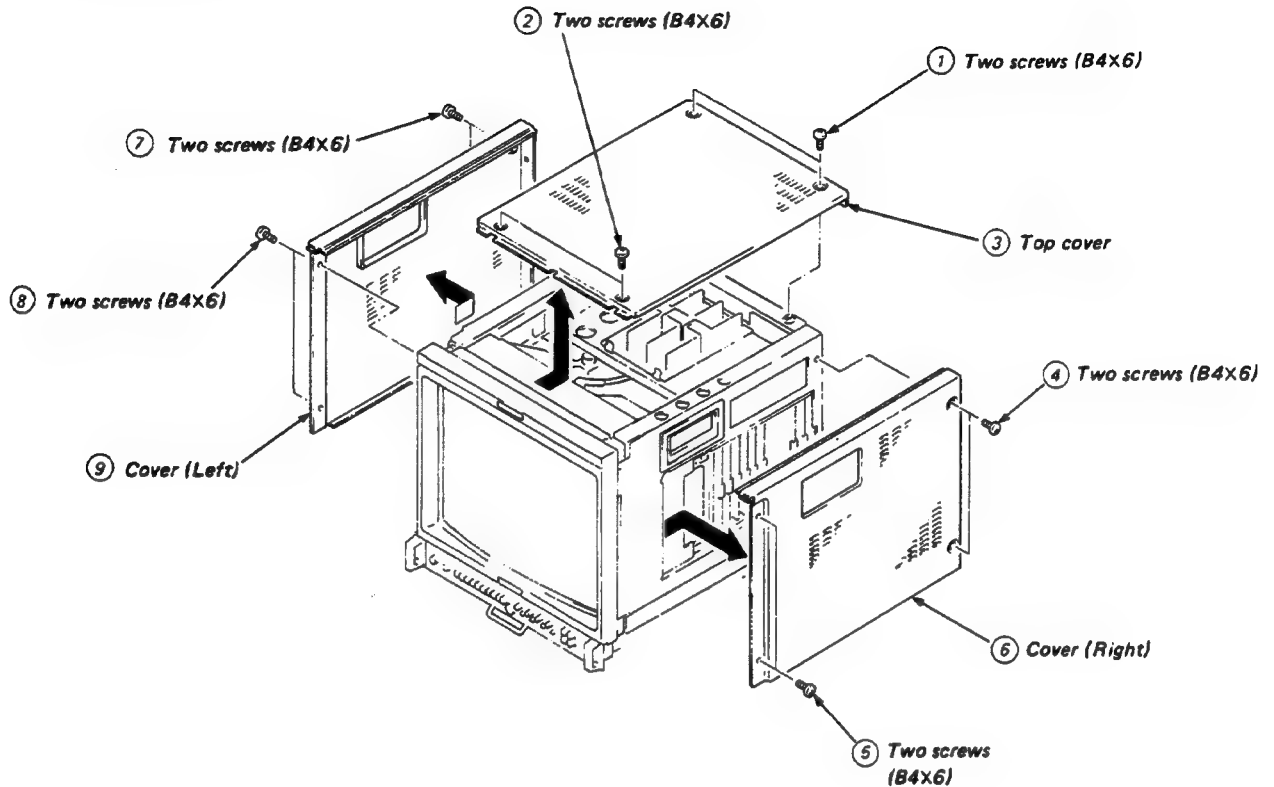
AC power cord (1)
Cord stopper (1)
Screwdriver (1)
Drawer keys (2)
Extension board (1)
10-pin connector (1)
Fuses (2)
Tally number plates (1 set)
Operation and maintenance manual (1)

Design and specifications are subject to change without notice.

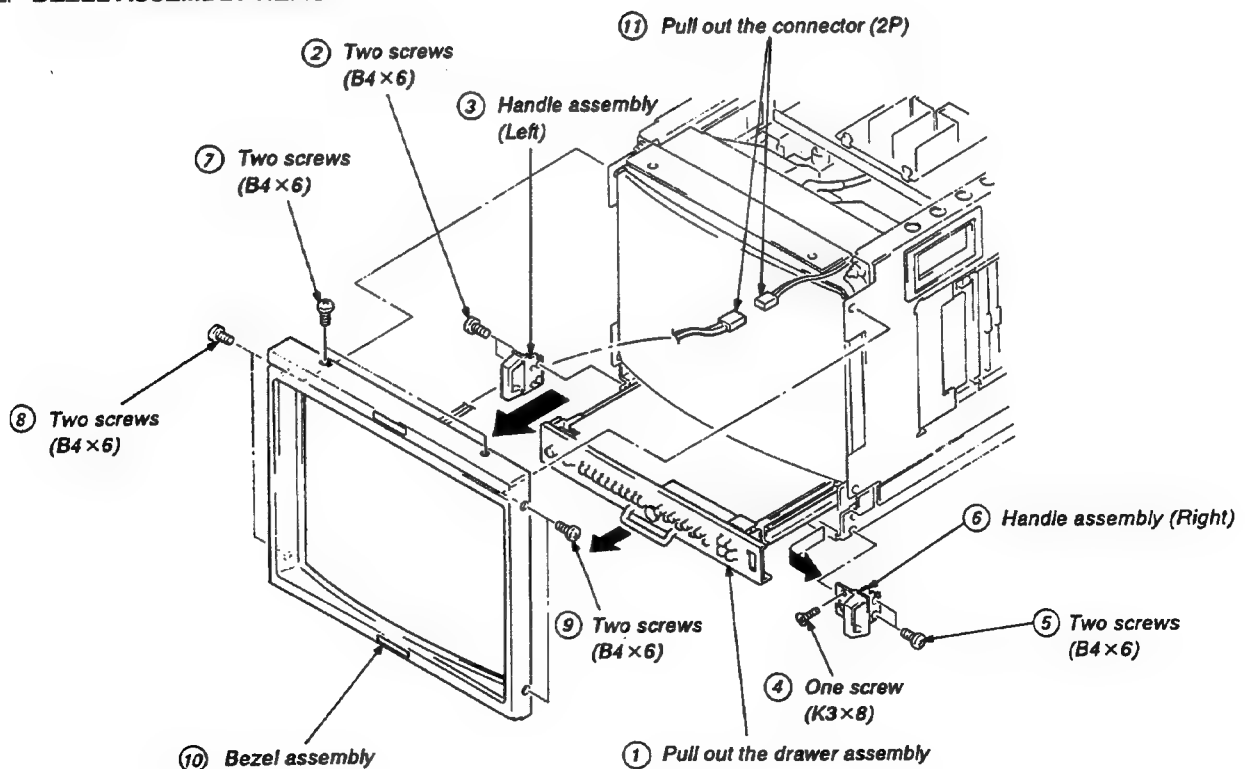
(1)

SECTION 2 DISASSEMBLY

2-1. COVER REMOVAL

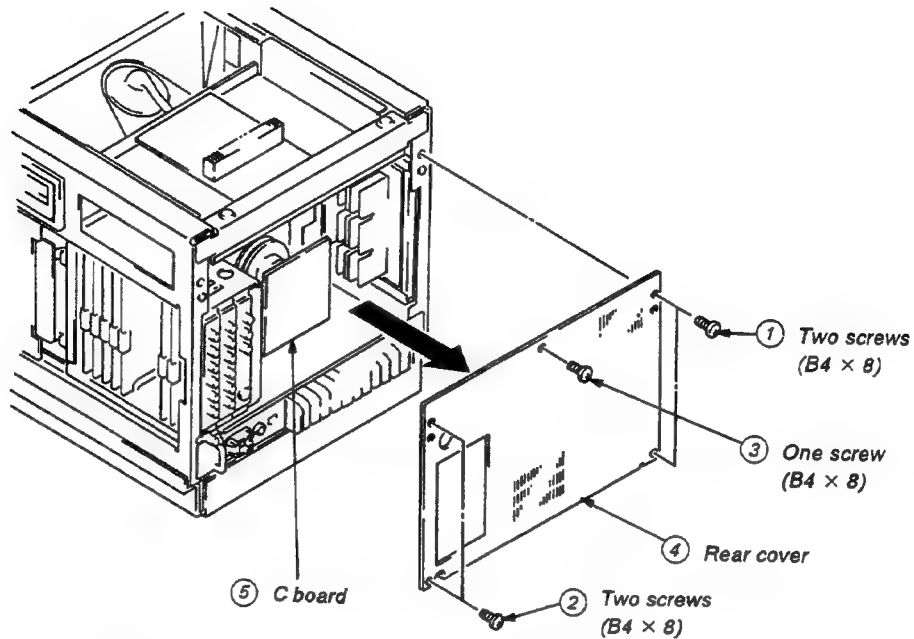


2-2. BEZEL ASSEMBLY REMOVAL



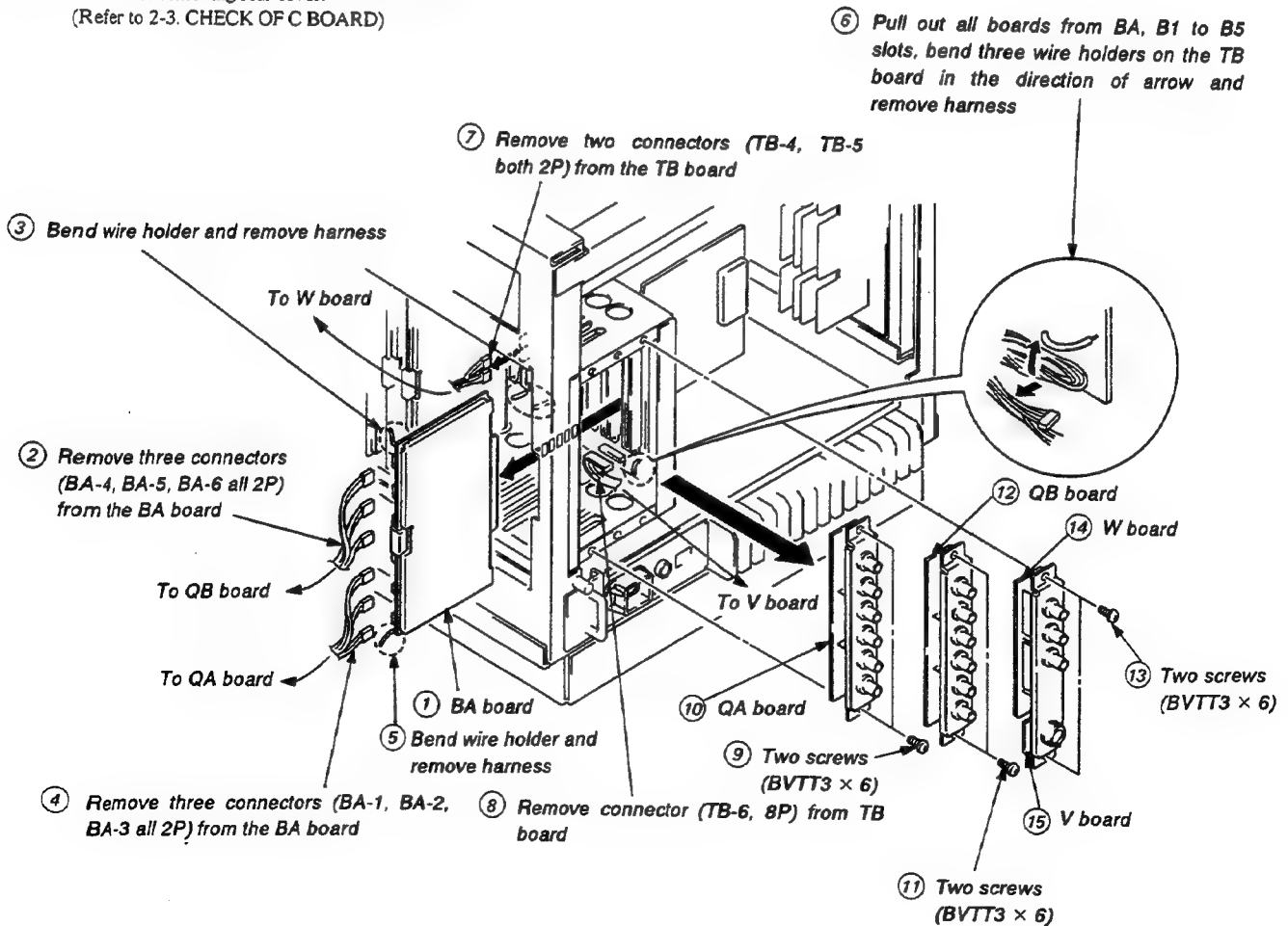
2-3. CHECK OF C BOARD

Note: Do it after removing cover (Right, Left)
(Refer to 2-1. COVER REMOVAL)

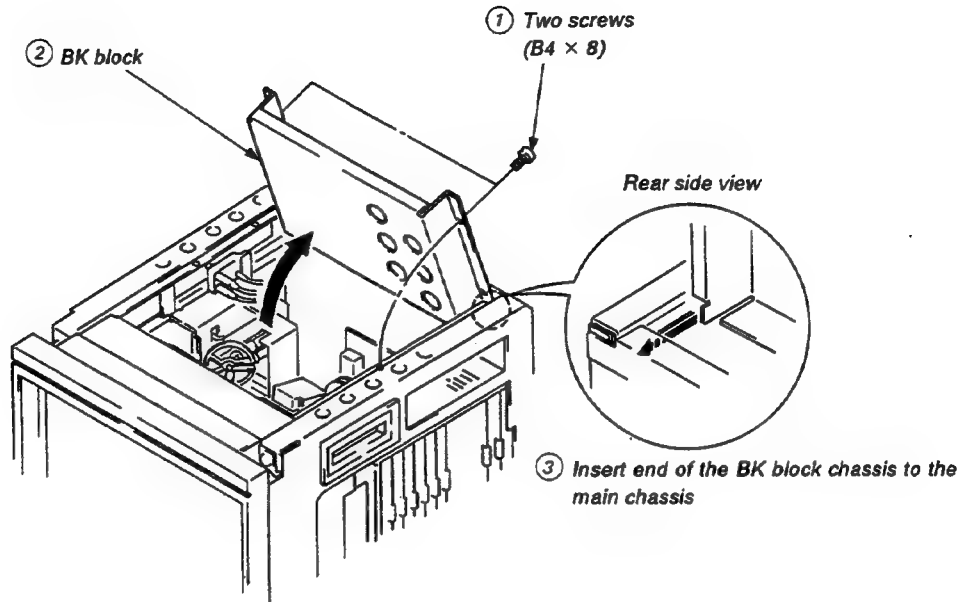


2-4. QA, QB, W AND V BOARDS REMOVAL

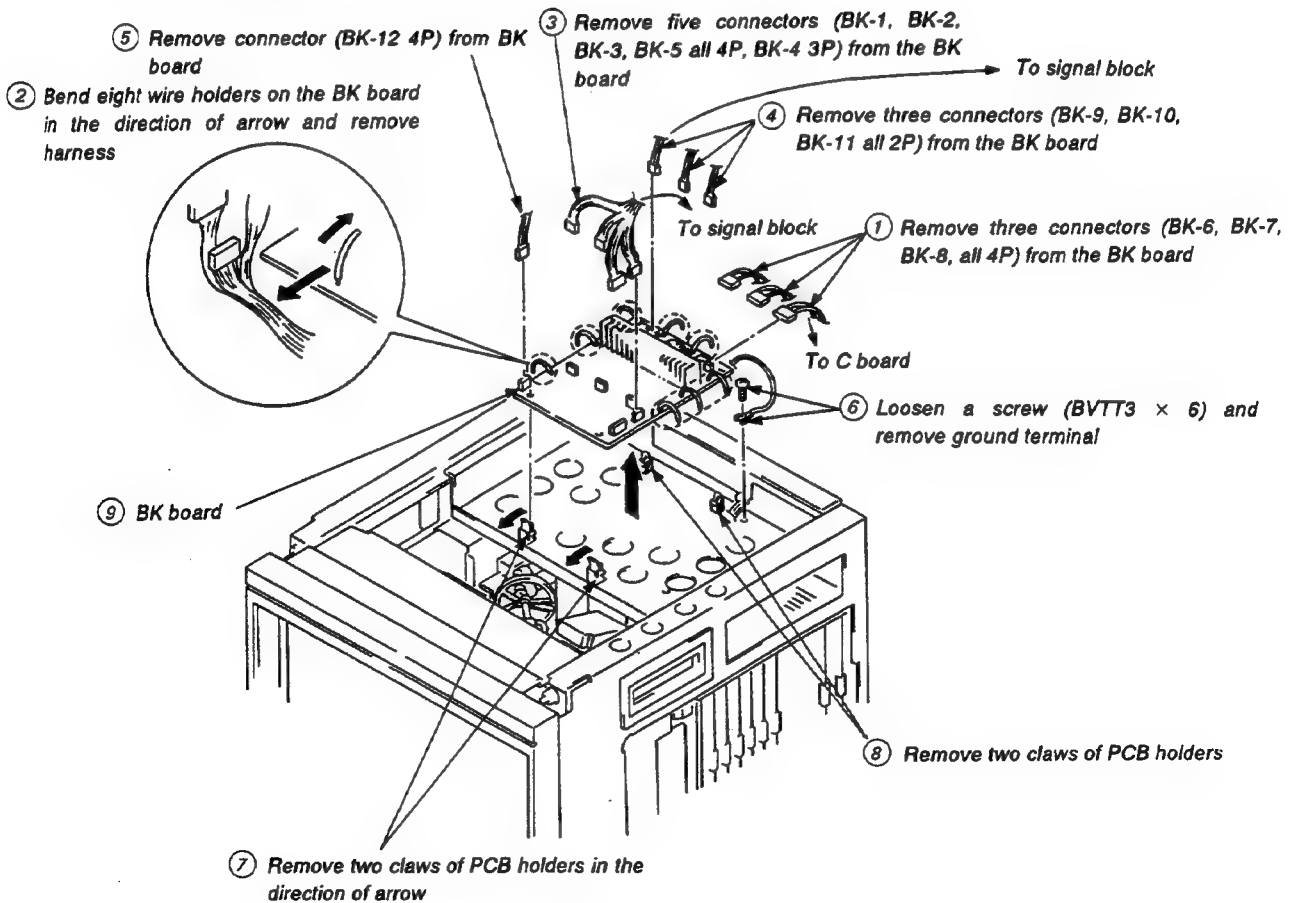
Note: Do it after removing rear cover.
(Refer to 2-3. CHECK OF C BOARD)



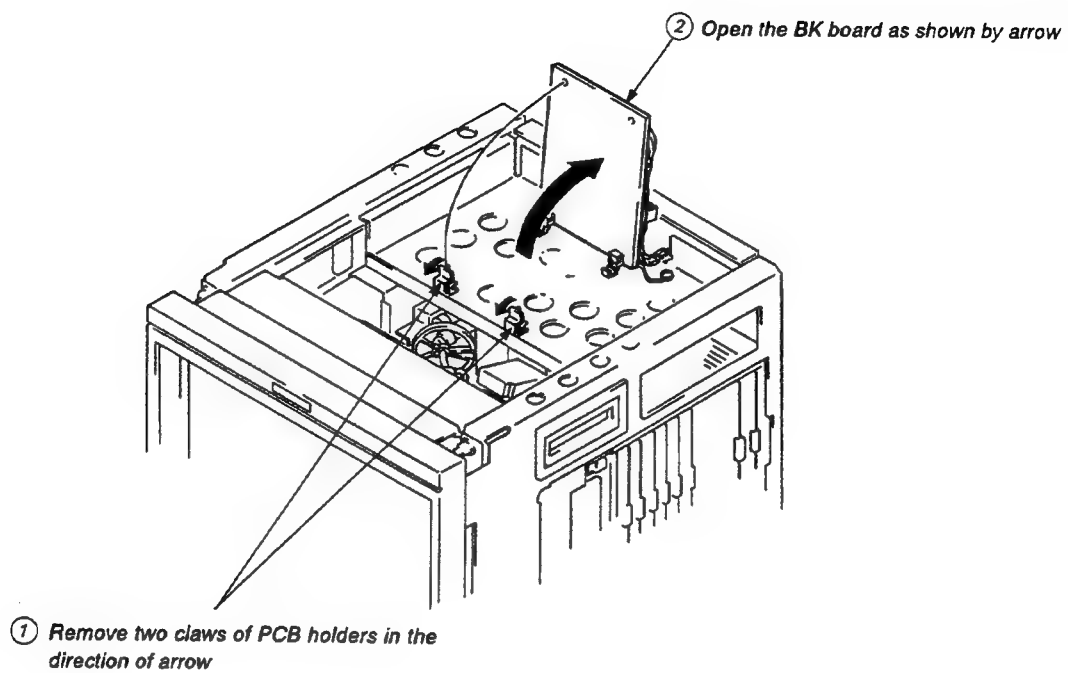
2-5. OPEN THE BK BLOCK



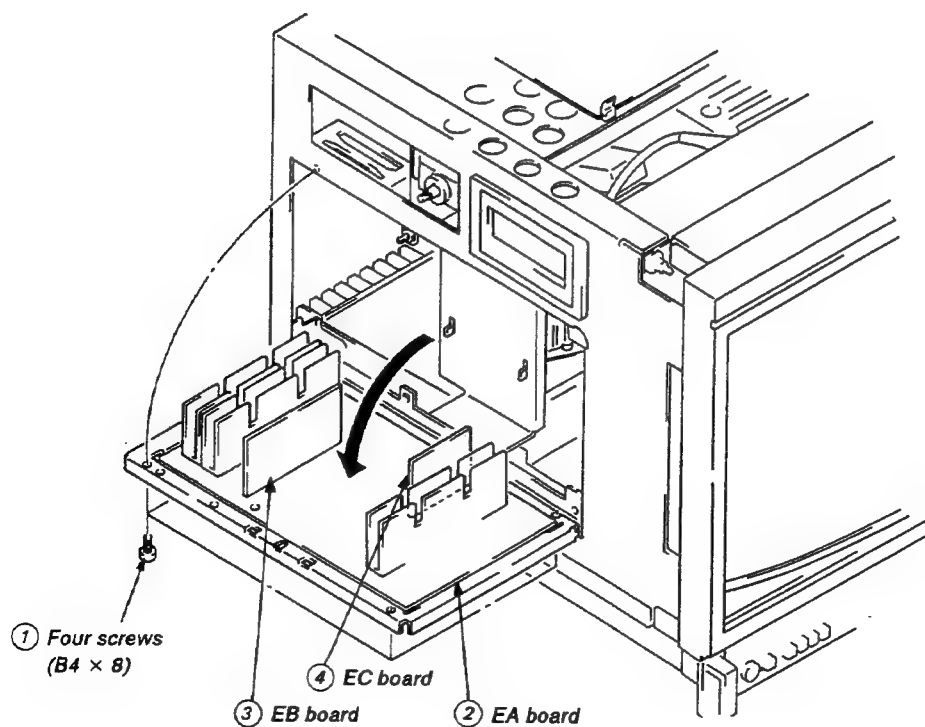
2-6. BK BOARD REMOVAL



2-7. CHECK OF BK BOARD



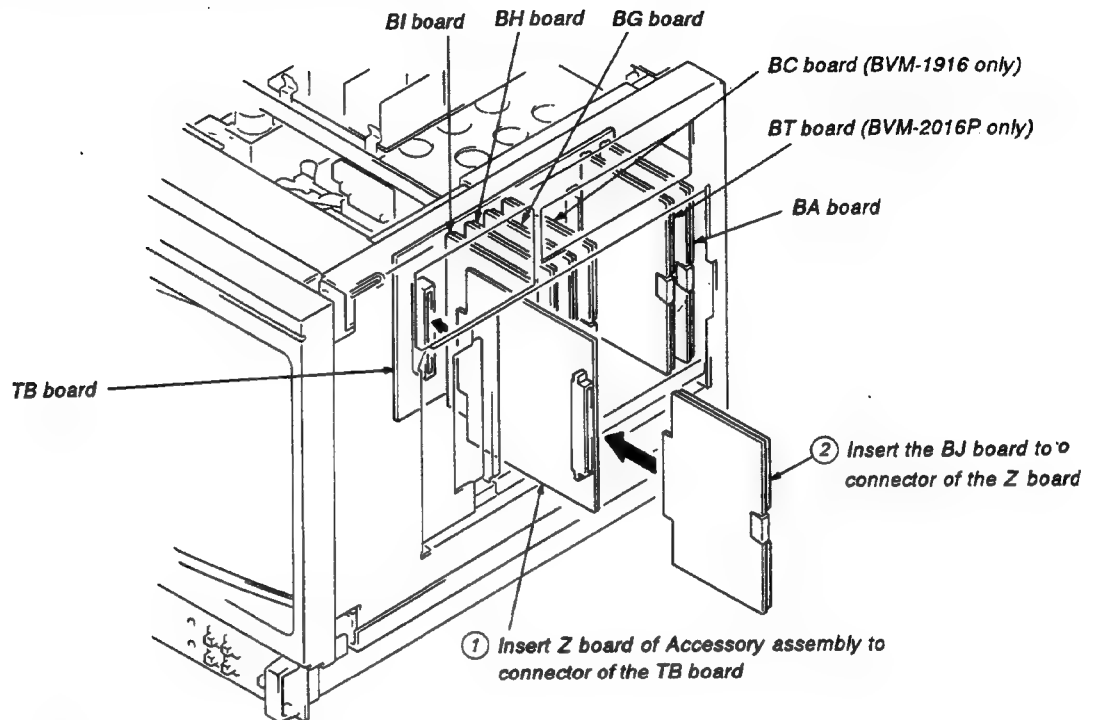
2-8. CHECK OF EA, EB AND EC BOARDS



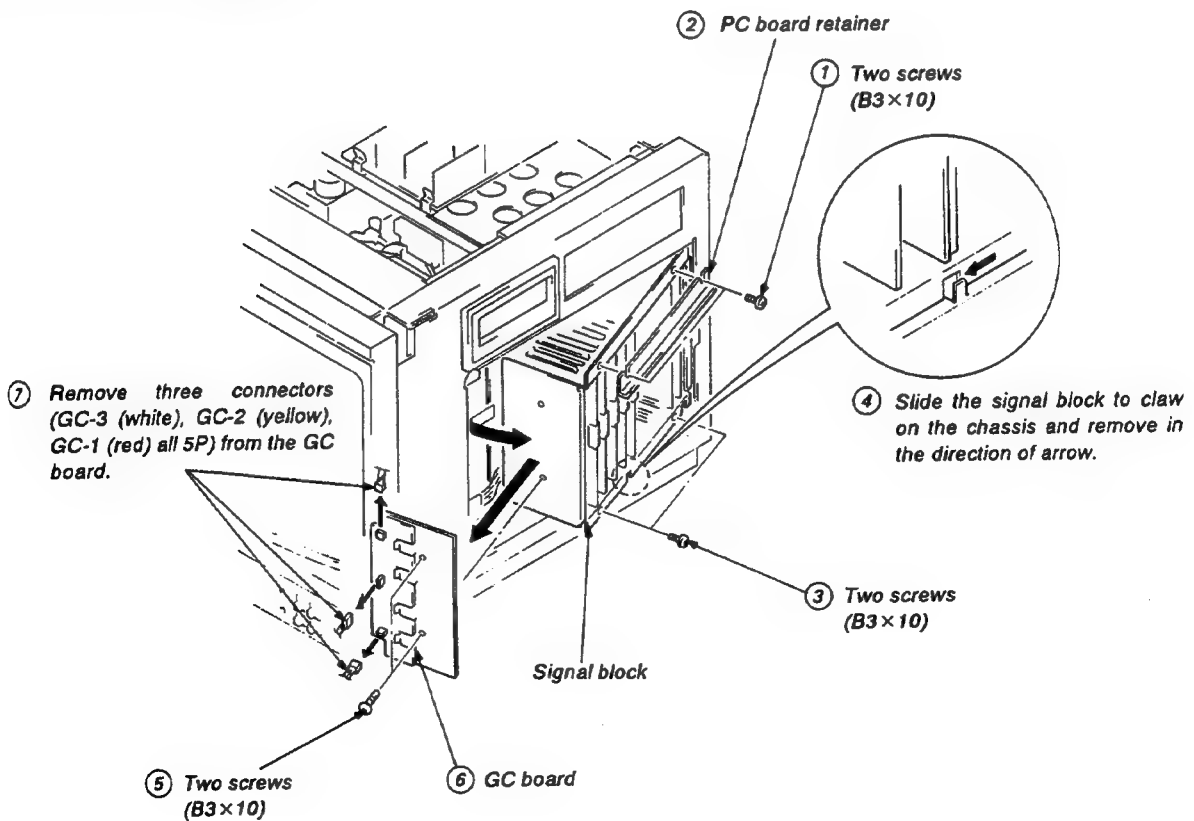
2-9. CHECK OF BJ BOARD

Note: PC board retainer is attach as anti-detach jig for the board. Remove the PC board retainer before checking.

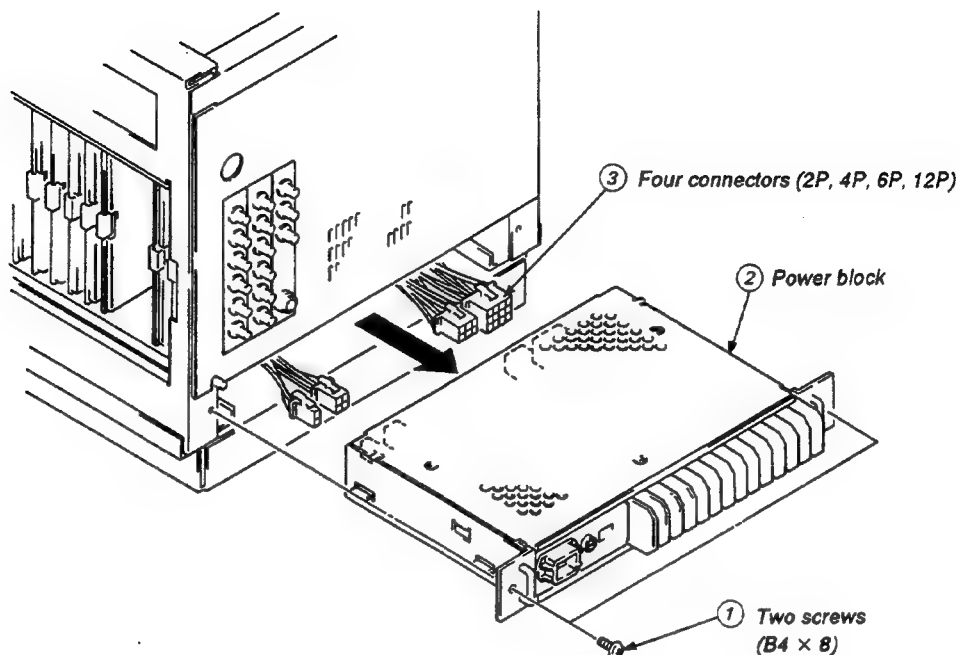
Note: BA, BC, BG, BH, BI and BT boards can be checked similarly.



2-10. GC BOARD REMOVAL



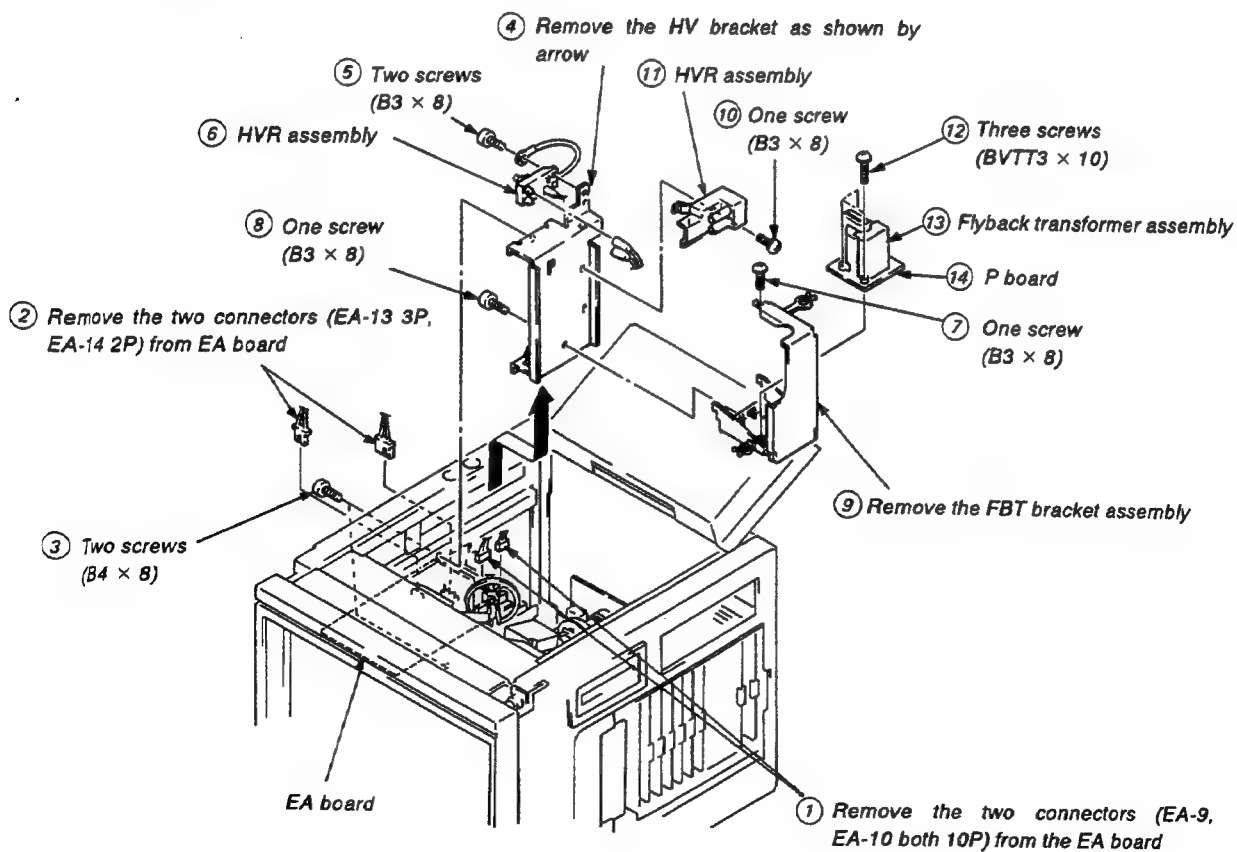
2-11. POWER BLOCK ASSEMBLY REMOVAL



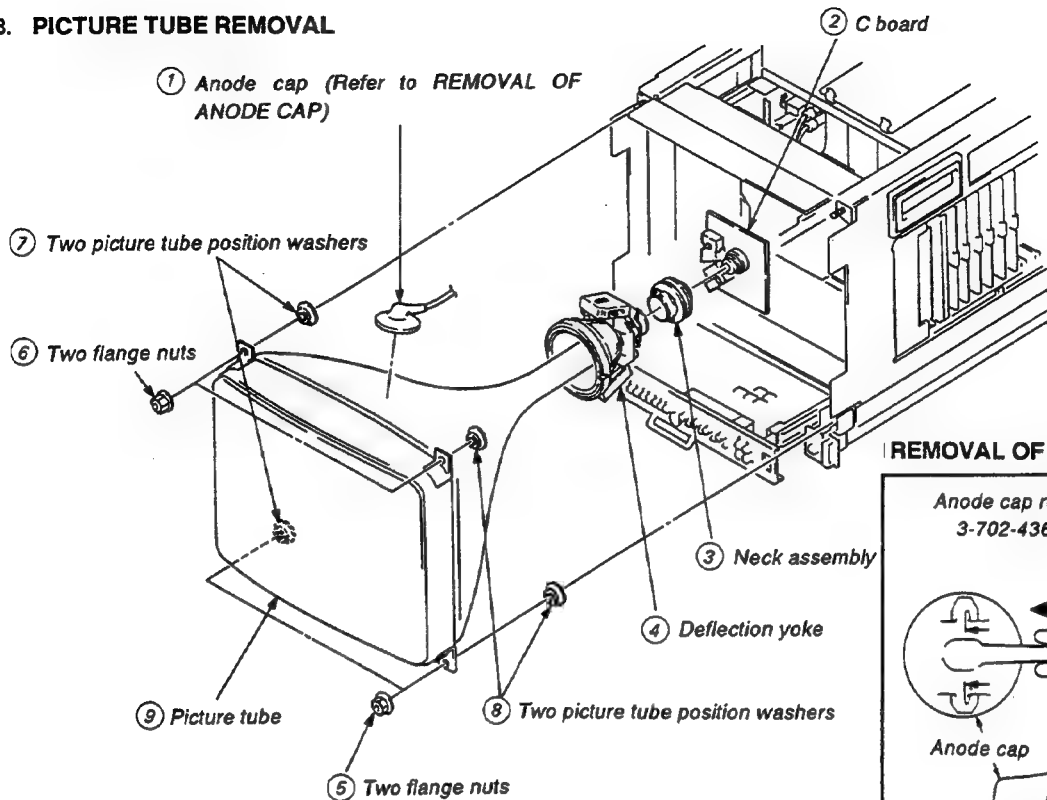
2-12. FLYBACK TRANSFORMER AND HIGH VOLTAGE BLOCK ASSEMBLY REMOVAL

Note: Do it after opening EA board.

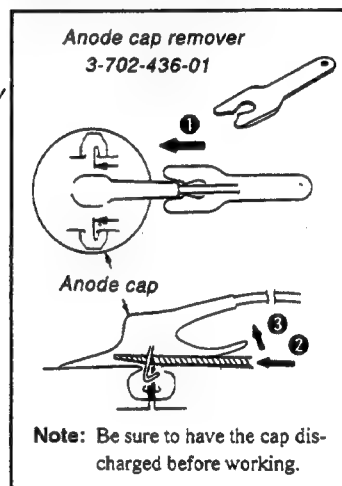
(Refer to 2-8. CHECK OF EA, EB AND EC BOARDS)



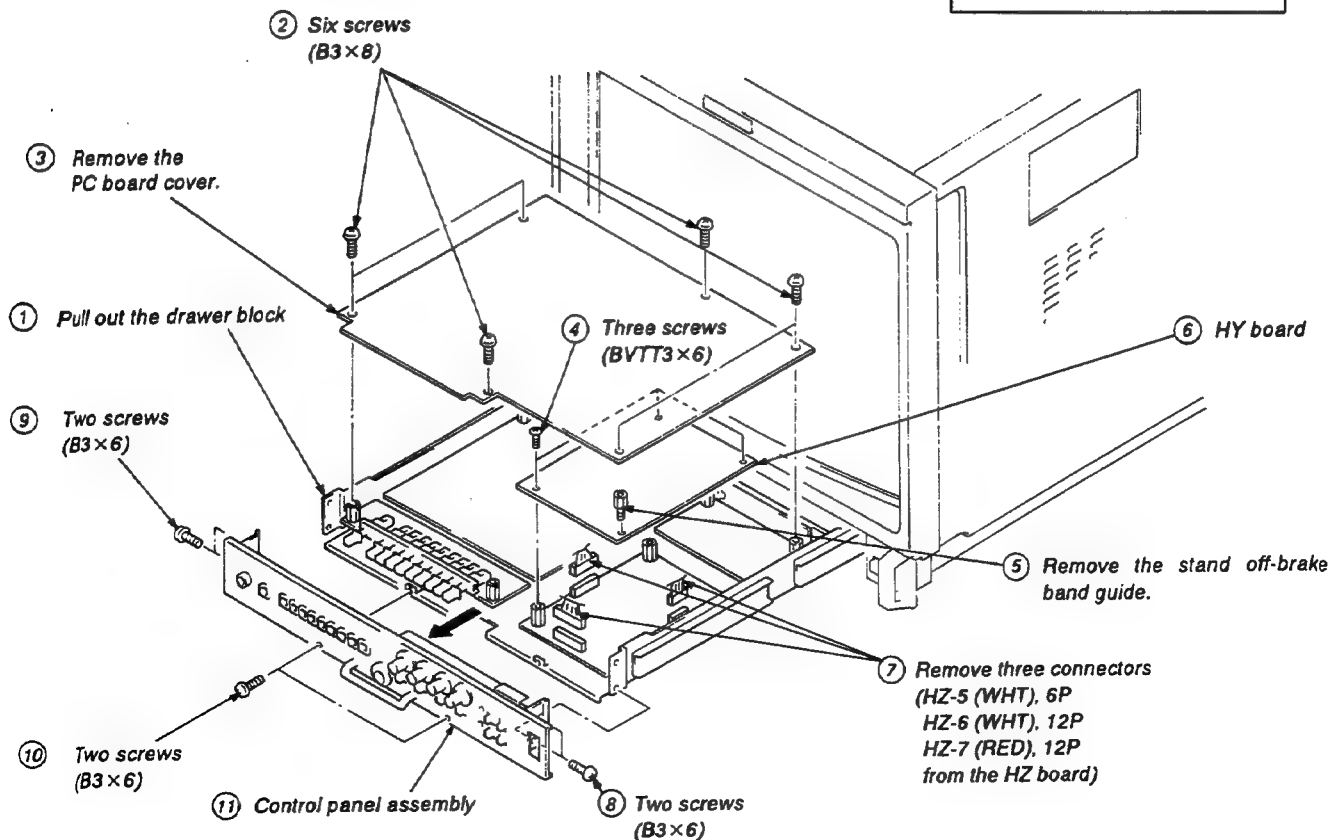
2-13. PICTURE TUBE REMOVAL



REMOVAL OF ANODE CAP



2-14. CONTROL PANEL ASSEMBLY REMOVAL



SECTION 3 CIRCUIT DESCRIPTIONS

3-1. QA, QB, BA BOARDS

3-1-1. Input Circuit

Cable Compensation (QA, QB)

CABLE COMPENSATION is composed of inductance L and capacitor C1 (Figure 1) in QA board and performs return loss compensation.

Grounding or floating in input terminal can be selected by switch S1.

On floating mode, common mode rejection can be performed. QB board also has same function.

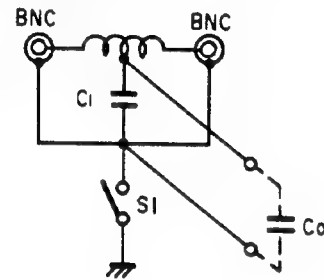


Figure 1

Hook Up Circuit (BA)

This circuit is composed of transistors Q101-105 and performs common mode rejection when SW S1 is selected to the floating mode.

In Figure 2, Gains of amplifier for input A and B are derived as follows.

$$A = \frac{R_c}{R_i} : \text{Gain of amplifier for input A}$$

$$B = -\frac{R_c}{R_i} : \text{Gain of amplifier for input B}$$

When input $(e_c + e_i)$ is applied to input A and input $(e_c - e_i)$ to input B, then output e_o is

$$e_o = \frac{R_c}{R_i} (e_c + e_i) + (-\frac{R_c}{R_i}) (e_c - e_i) = 2 \frac{R_c}{R_i} e_i$$

This equation indicates that e_c is eliminated and there is no common mode signal in output signal.

On hook up circuit, NF Amplifier (Negative Feedback) is used to get frequency response flat.

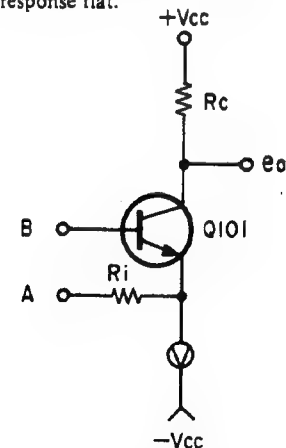


Figure 2

Input Select Sw, Sync Select SW (BA)

For composite video signal, VIDEO A/B/TEST mode is selected by INPUT SELECT SW (IC1). For sync signal, INT SYNC/EXT SYNC is selected by SYNC SELECT SW IC2.

3-1-2. Sync AGC Circuit

This circuit is composed of following components; LPF (Low Pass Filter) (Q701), variable gain amplifier (Q702-Q705), bias control circuit (Q708-Q710), gain control circuit (Q711, 712) and amplifier (Q706, 707), Figure 3 shows block diagram of this circuit.

An inverted composite video signal or composite sync signal (e_o) is derived at the collector of transistor Q707.

The bias control circuit compares maximum value of e_o with base voltage of Q708 (E1) and controls bias of amplifier so that they match.

Also the gain control circuit compares pedestal level of e_o with base voltage of Q711 (E2), and controls variable gain amplifier so that they match.

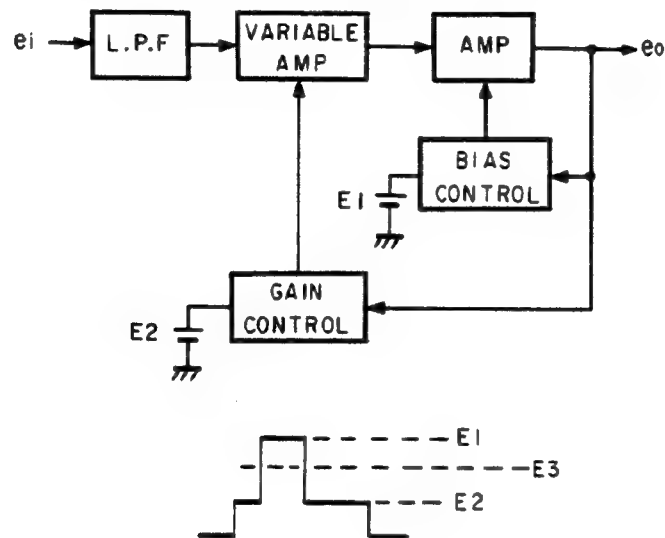


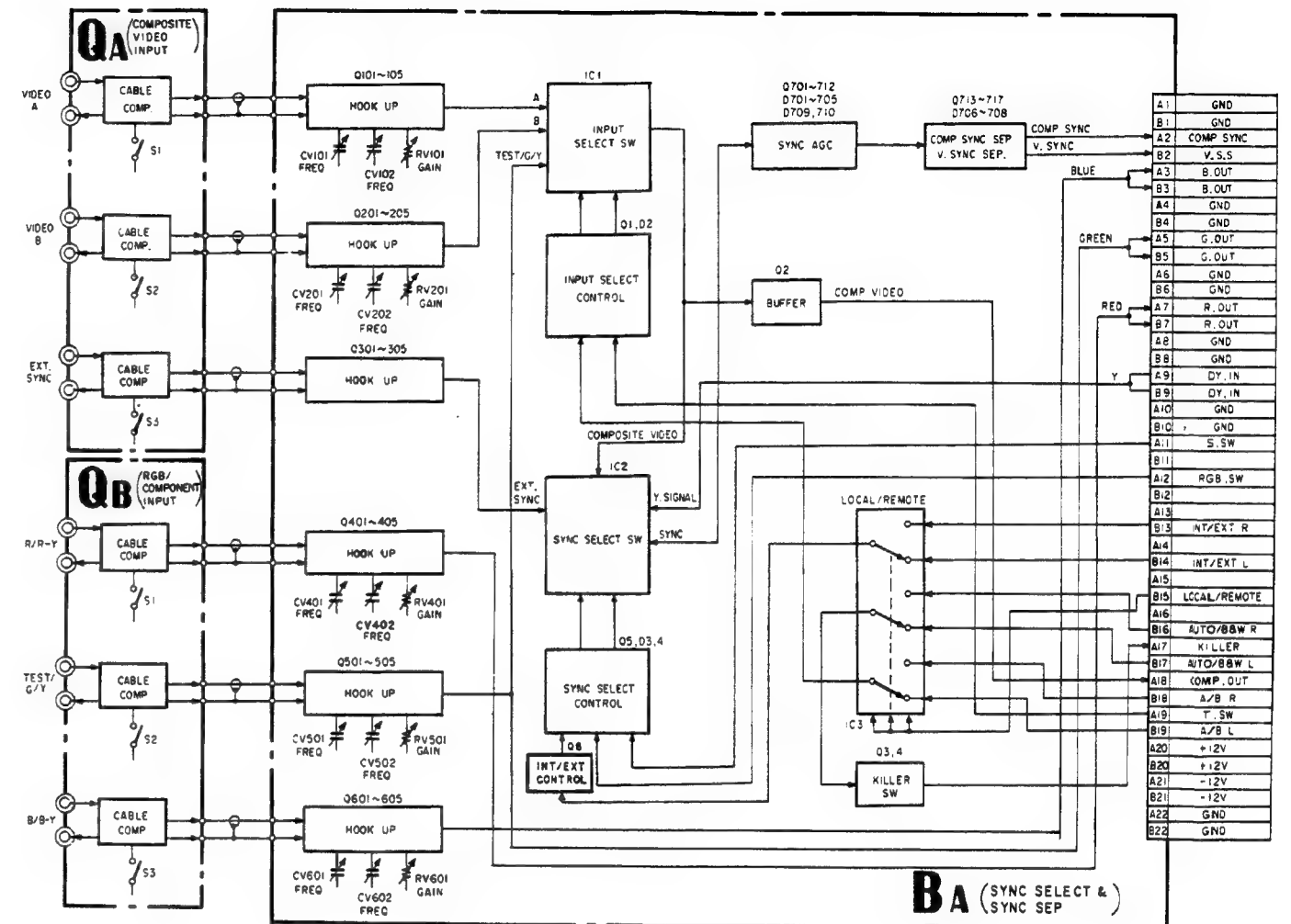
Figure 3

Composite Sync Separation, Vertical Sync Separation

Composite sync is separated from composite video signal or composite sync by comparing voltage e_o with the base voltage of transistor Q713 (E3).

Horizontal component in composite video signal or composite sync signal is removed by LPF (Low Pass Filter, Q716) and Vertical sync is separated by transistor Q717.

BLOCK DIAGRAM OF QA, QB, BA BOARDS



3-2. BG BOARD

3-2-1. Luminance Signal Circuit

Filter SW
IC1 works as a selector switch of composite video signal or luminance signal derived from Y/C separation circuit. This IC activates by either FILTER-SW in right side drawer or killer signal.

Aperture Control
Aperture control circuit is composed of DL1(delay line), transistors Q5, 7, 8 and IC2. IC2 operates as a variable resistor. Resistance value between Pin① and ③ is controlled by the potential between pin ③ and pin ④, also pin ① and pin ⑥.

Input signal: e_{r0} ,
Delayed signal by delay line: e_{r1}
Second delayed signal: e_{r2}

See Figure 4
 e_1 (at base of transistor Q5) is obtained as below due to the combination of direct wave and reflected wave by DL1.

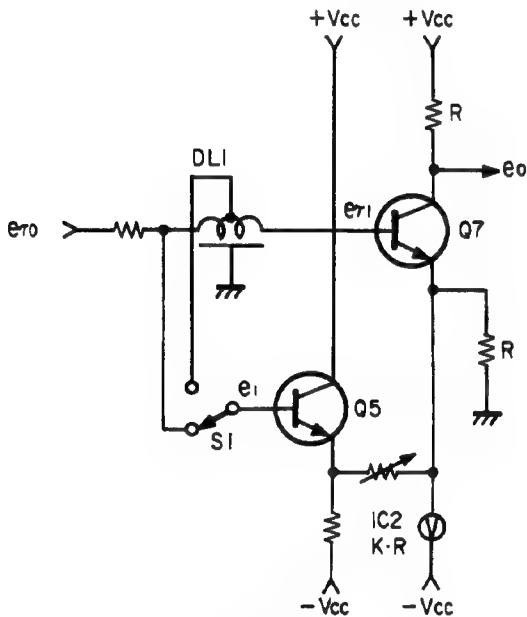


Figure 4

$$e_1 = (e_{r0} + e_{r2})/2$$

Therefore e_0 is

$$e_0 = \underbrace{-(e_{r1} + \frac{1}{K}(e_{r1} - \frac{1}{2}(e_{r0} + e_{r2})))}_{1st \text{ term}} + \underbrace{\frac{1}{2}(e_{r0} + e_{r2})}_{2nd \text{ term}}$$

K: variable constant

In the above equation, 1st term shows waveform A in Figure 5 and 2nd term shows waveform B. When K is variable, amount of pre-shoot and overshoot can be varied.
Switch S1 is used for selection of boost frequency.

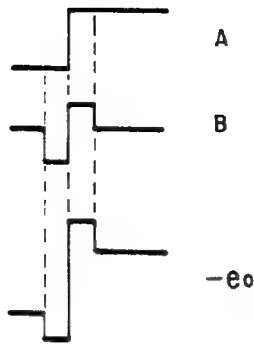


Figure 5

Y Delay, Y Buffer Amplifier
Y/C delay time can be matched by delay line DL2 and Y signal is amplified and fed to the next stage.

3-2-2. Color Gain Control Circuit

In this section (R-Y) signal processing is described as below, but (B-Y) signal is processed by the same way as (R-Y) signal.

R-Y Amplifier and Clamping
The R-Y color difference signal from the decoder board is amplified at the amplifier composed of transistors Q21 and Q22 and clamped at the Horizontal Sync by transistors Q23 and IC3.

R-Y Gain Control Amplifier
This is a variable gain control amplifier composed of variable resistor element of IC4 and transistors Q25-Q27. Gain of this amplifier can be controlled by the color gain control voltage at the pin ② of IC4.

AGC Pulse Generator
Generates the reference pulse for AGC (Automatic Gain Control) of color gain control circuit.

Gain Control Amplifier for AGC Pulse
Circuit is the same as R-Y GAIN CONTROL AMPLIFIER. Gain of this amplifier is controlled by the voltage at pin ⑧ of IC4.

Color Gain Control
AGC pulse, which is output signal of Gain control amplifier for AGC pulse, is clamped by IC6 (2/3) and is made sampling by IC6 (3/3). Amplitude of AGC pulse and DC voltage supplied from CHROMA control on the front panel are compared and mached by IC7 (1/2) with controlling the above gain control amplifier. This control voltage is supplied to the control terminals of R-Y and B-Y gain control amplifiers and controls color gain.

3-2-3. G-Y MATRIX amplifier

G-Y signal is obtained by matrixing R-Y signal and B-Y signal with the amplifier composed of transistors Q44 and Q45.

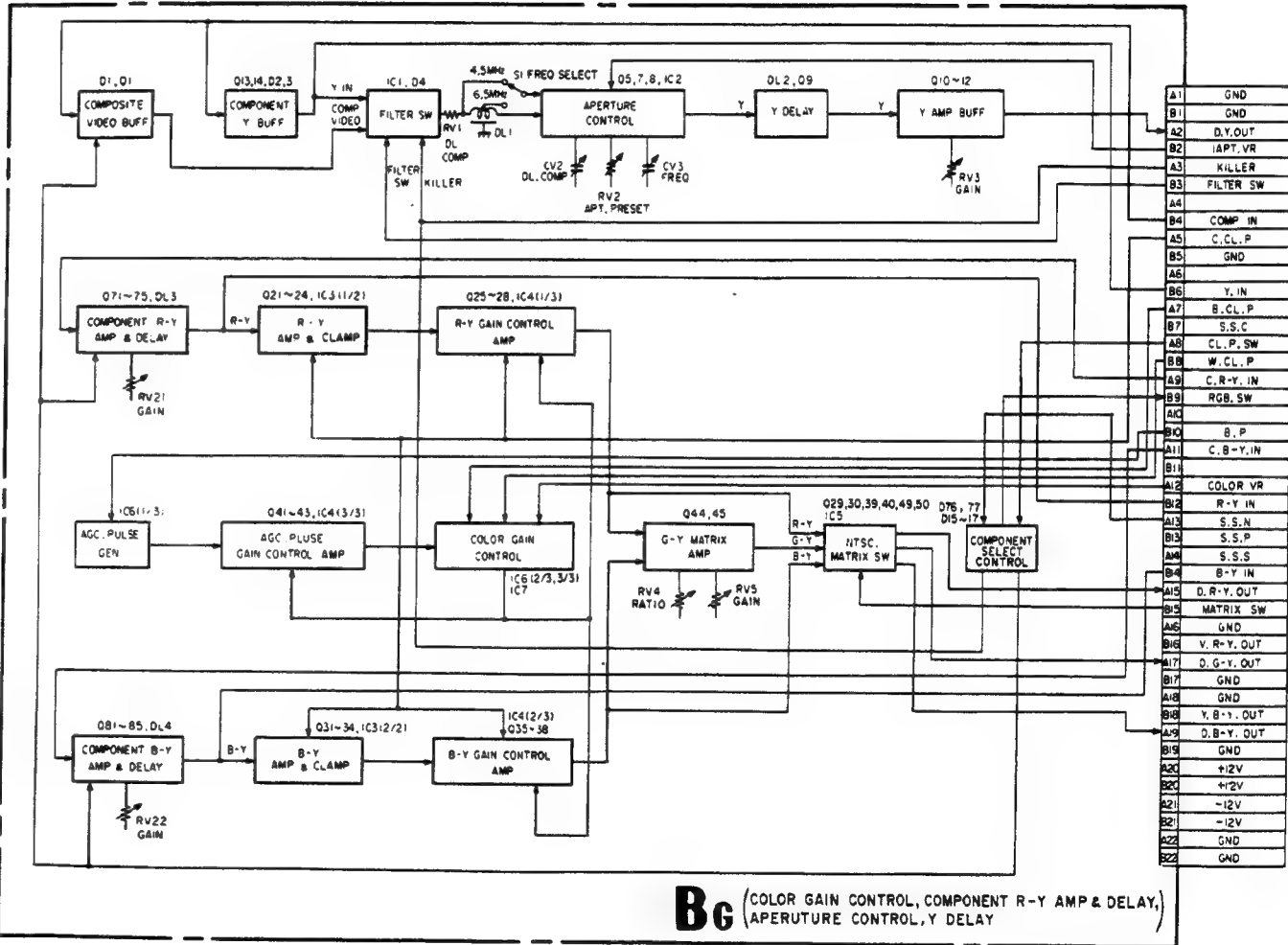
3-2-4. NTSC MATRIX SW

NTSC MATRIX mode operation is obtained by the matrix circuit composed of resistor networks CP14-CP19, transistor Q29, Q30, Q39, Q40, Q49, Q50 and IC5. CP14-CP19 perform matrixing and IC5 works as a switch.

3-2-5. COMPONENT R-Y Amplifier and Delay Circuit

R-Y signal of COMPONENT signal is compensated with amplitude, porality and delay time to match the R-Y signal of decoder output.

BLOCK DIAGRAM OF BG BOARD



3-3. BH BOARD

3-3-1. Switching Circuit Between Y (Luminance) Signal, Color Difference Signal and RGB Signal, AGC Pulse Insertion, Y-C Matrix

Switching Circuit of Y Signal, Crosshatch Signal and SET UP Signal, Buffer

Y signal, crosshatch signal and SET UP signal are selected by the switcher (IC1 (1/3) (2/3)) and selected signal is output via buffer Q1.

Switching Circuit of R-Y Signal, Red Signal and SET UP Signal (Same as B-Y, G-Y Signal)

R-Y signal, Red signal, SET UP signal are selected by IC2 (1/3, 2/3) and selected signal is output via buffer Q4.

Y Signal Screening (Same as R-Y, B-Y, and G-Y Signals)

The signal is performed SAMPLE and HOLD (S/H) at the back porch of signal by transistor Q2 and IC5 (2/2). Y screening is performed by replacing S/H output signal, by the original signal. For color difference signals screening is made at the Horizontal Sync portion.

Red Matrix, Blue Only SW, Buffer (Same as Green and Blue)

Red is obtained by Y-C matrix circuit composed of resistor network CP9 from color difference signals.

AGC pulse from pulse generator is inserted into Red signal for contrast control.

IC7 activates by the Blue only SW on the front panel. Blue only SW is used for the display of blue signal as a monochrome picture.

3-3-2. Contrast Control, Brightness Control, Peak Limitter

Red Contrast, and Brightness Control Amplifier (Same as Green and Blue)

This is a variable gain control amplifier composed of variable resistor element IC101 and transistor Q102 and Q103. By controlling the voltage at pin ④ of IC101, contrast control is performed, and brightness control is done by controlling the bias voltage of transistor Q102.

Red limiter (Same as Green and Blue)

When excess input signal comes in, amplitude is limited by the limiter composed of transistors Q104 and Q105.

Red Contrast Control (Same as Green and Blue)

AGC pulse inserted in Red signal is clamped by transistor Q107 and sampled by transistor Q108.

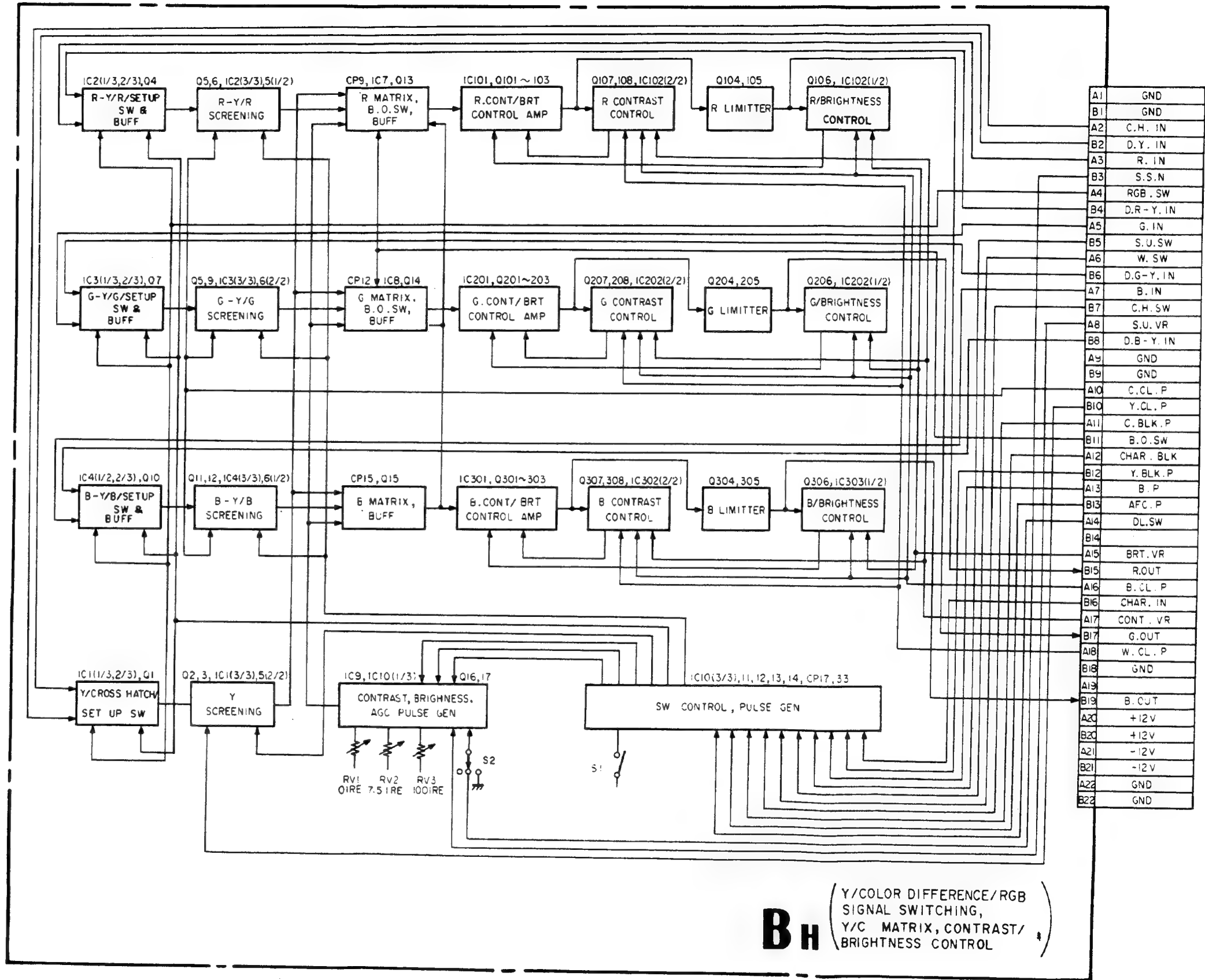
Amplitude of above AGC pulse is compared with the reference voltage applied from CONTRAST control on the front panel in IC102 (2/2).

Contrast control is performed by controlling the gain of Red contrast brightness control amplifier so that these voltages may match.

Red Brightness Control (Same as Green and Blue)

The black level of Red signal is performed SAMPLE and HOLD (S/H) by transistor Q106. This S/H voltage is compared with the reference voltage applied from Brightness control on the front panel in IC102 (1/2). Brightness control is performed by controlling the bias of Red contrast Brightness control amplifier so that these voltages may match.

BLOCK DIAGRAM OF BH BOARD



3-4. BI BOARD

(Same as Green and Blue)

3-4-1. Red Screen SW, AGC Pulse Insertion

Red signal can be cut off by RED SCREEN SW on the front panel. Horizontal rate AGC pulse is removed and the reference pulse is inserted in the signal for the GAIN and BIAS adjustment of video output amplifier and for the beam control circuit.

3-4-2. Red Limiter, Gain Bias Control Amplifier

This limiter is used for limiting the excess input level of the signal below 0V DC.

The GAIN/BIAS CONTROL amplifier is composed of variable resistor element and transistors as same as contrast control amplifier (See section of BH board)

3-4-3. Red Feedback Amplifier, Red Gain Control Red Bias Control Circuit

RED FEEDBACK amplifier inverts the phase of the signal derived from VIDEO OUTPUT amplifier via NF BUFF (Negative Feedback Buffer) in BK board.

The BIAS of VIDEO OUTPUT AMPLIFIER is controlled by RED BIAS CONTROL circuit so that the black level of inverted signal may be 0V DC.

(This time, black level of VIDEO OUTPUT will be -90V DC.)

RED GAIN CONTROL circuit controls the gain of VIDEO OUTPUT AMPLIFIER so that the level of the reference pulse may match to the voltage at pin ③ of IC103.

(When GAIN control (RED) in the drawer is turned, the level of the reference pulse inserted in section 1 changes. And amplitude (Gain) of Red signal changes so that the amplitude of the reference pulse derived from RED FEEDBACK amplifier may be maintained constant by GAIN CONTROL circuit.)

3-4-4. Red Cathode Current Detection, Red Beam Current Control Circuit (I-V Conversion)

Refer to the BK board section of beam control circuit

3-4-5. ABL Detector, Drive Control, Over Drive

The reference level of GAIN CONTROL circuit is controlled by ABL detector and DRIVE CONTROL so that the cathode current of CRT exceeds the predetermined (Preset) value to prevent damage of CRT. OVER DRIVE circuit lights up the OVER LOAD LED on the front panel for warning.

3-4-6. G2 Control Circuit

Circuit diagram of G2 control circuit is shown in Figure 6.

The signal for BM. CURRENT control is fed to base of the transistor Q11 from RED BM. CURRENT control circuit. (Same as G and B)

Transistors Q11-Q13 are turned on and compared with the reference voltage of base voltage Q14.

And this circuit drives transistor Q3, Q2 located in C board so that Transistor Q3, Q2 in C board drives G2 voltage for adjusting cut off level of CRT.

Base voltage of Black level at CATHODE electrode may be +120V DC and maintain Ekco (cut off voltage) +120V constant.

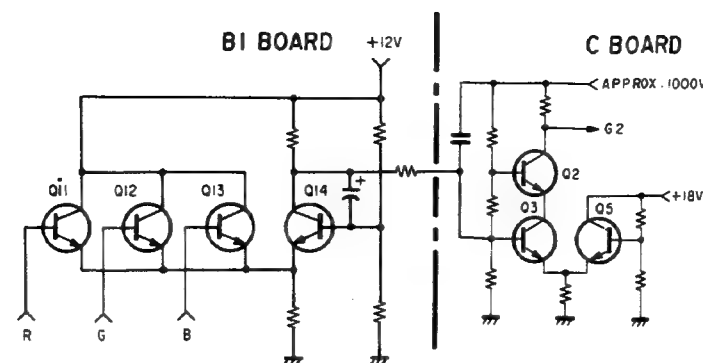
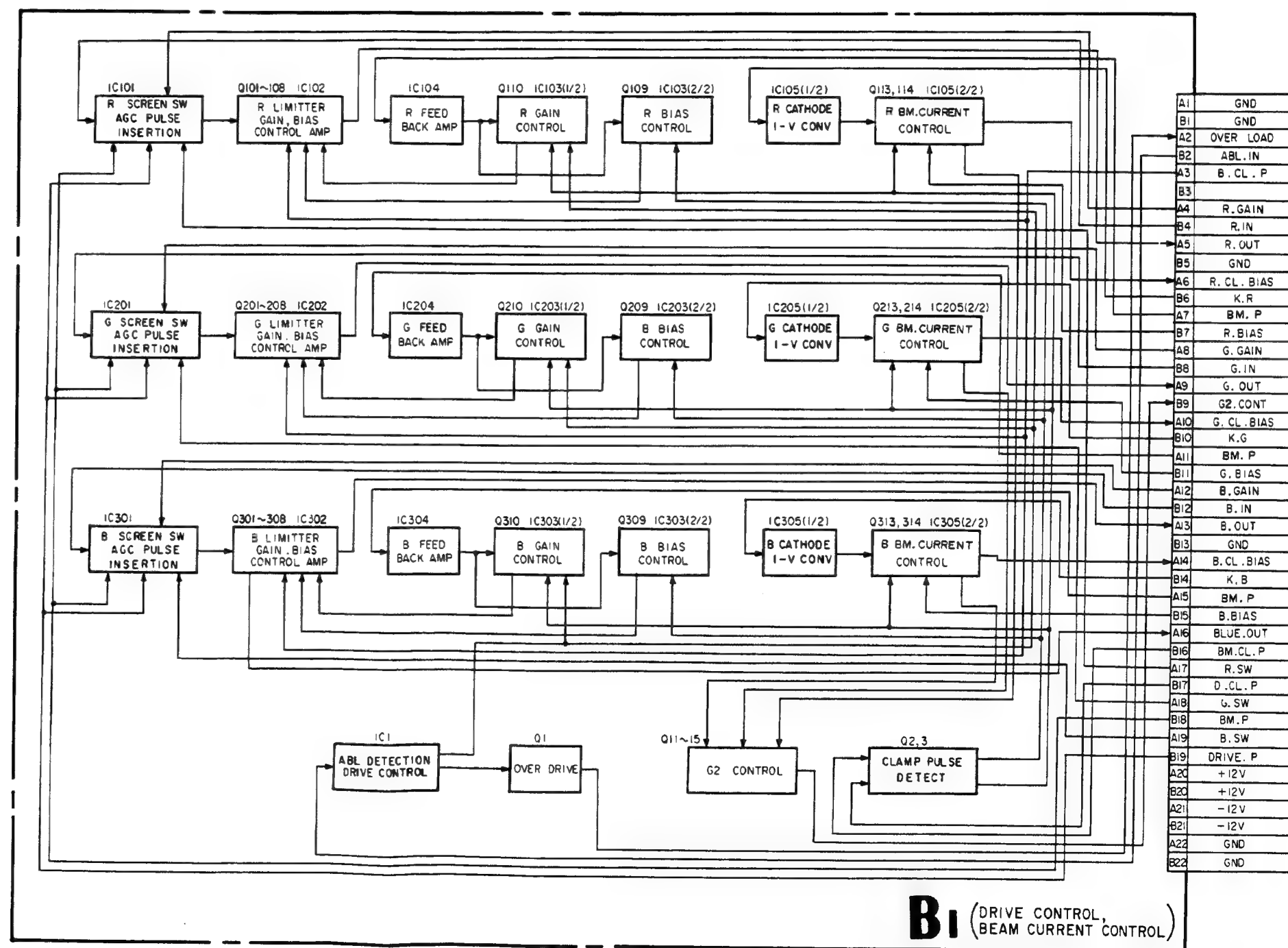


Figure 6

BLOCK DIAGRAM OF BI BOARD



3-5. SYNC PROCESSOR, PULSE GENERATOR (BJ BOARD)

3-5-1. 1H Pulse Processing

The composite sync is separated from incoming signal at BA board. And 1H sync is made by separating V sync and equalizing pulse from composite sync.

Also H sync which has constant pulse width is made from 1H sync.

3-5-2. 2fH Multivibrator

This circuit generates 2fH rate pulse from H rate flyback pulse.

3-5-3. Vertical Counter

The 2fH rate pulse is counted down to generate Vertical rate trigger pulse for vertical deflection circuit.

When there is no incoming signal, trigger pulse is generated by vertical counter (384H).

When there is incoming signal with V sync, this counter circuit is reset by V sync and generates trigger pulse synchronized with V sync.

Also in order to increase stability of vertical scanning, noise gating process is made during V sync period.

3-5-4. V Sync and Delay

V sync and V BLANKING pulses are generated by output trigger pulse from vertical counter.

And when V DELAY SW on the front panel is selected ON, these pulses are generated in a V/2 delayed position relative to the V sync position of incoming signal.

3-5-5. Crosshatch Generator

Internal crosshatch signal is made as follows.

The vertical lines are generated by approx. 18fH rate pulses synchronized with flyback pulse.

And flyback pulse is counted down to generate horizontal lines.

3-5-6. Burst Gate Pulse, Y-CLAMP Pulse, C-CLAMP Pulse Generator

The Burst Gate Pulse (B.G.P.), clamp pulse for luminance signal (Y.CL.P) and clamp pulse for color difference signal (C.CL.P) are generated from 1H sync via LCR network and transistors.

3-5-7. Picture Set Up Pulse Generator

This is the gate pulse generator for picture set-up function, and consists of mono multipliers.

3-5-8. Split, Y Blanking, C Blanking Pulse Generator

Y BLANKING pulse (Y BLK P) and C BLANKING pulse (C BLK P) are generated. These pulses are used for the purpose of DC restoration of color difference signal, Y signal and RGB signal. DC restoration is made by inserting the black reference signal during blanking period in the signal. Also C.BLK. pulse is mixed with vertical rate blanking signals for SPLIT display and for B/W display.

3-5-9. Horizontal Rate AGC and Clamp Pulse Generator

COLOR GAIN control, CONTRAST control and BRIGHTNESS control are stabilized by insertion of reference signal and using feedback circuit. Horizontal rate BLACK pulse (B.P), BLACK CLAMP pulse (B.CL.P) and WHITE CLAMP pulse (W. CL.P) are generated here.

3-5-10. Vertical Rate AGC and Clamp Pulse Generator

In this model, BEAM CONTROL circuit is used for high stability in white balance.

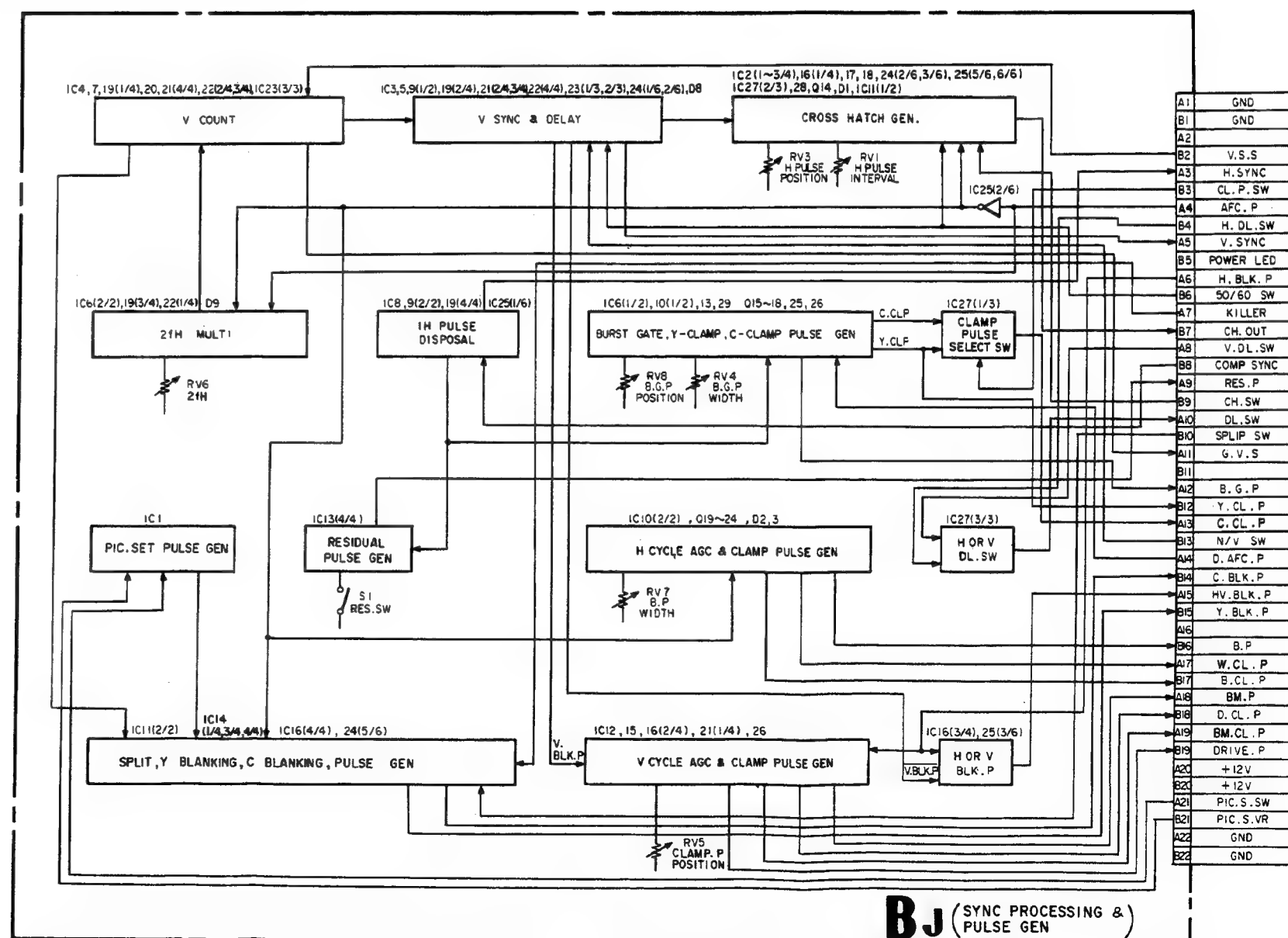
The reference signal is inserted in the signal for gain control circuit in video output amplifier and for beam control circuit. Vertical rate pulses are used for this purpose.

Vertical rate BEAM PULSE (BM.P) DRIVE PULSE (DRIVE.P) and BEAM CLAMP PULSE (BM.CL.P) are generated here.

3-5-11. Others

Black reference is determined at the position of clamping in black reference insertion circuit for both color difference signal and RGB signal. Accordingly C.CL.P is used as clamp pulse for color difference signal processing and Y.CL.P is for RGB signal. CLAMP PULSE SELECTION SW switches C.CL.P or Y CL.P to the clamp pulse for the insertion of black reference.

BLOCK DIAGRAM OF BJ BOARD



TIMING CHART OF MAJOR PULSE (BJ BOARD)

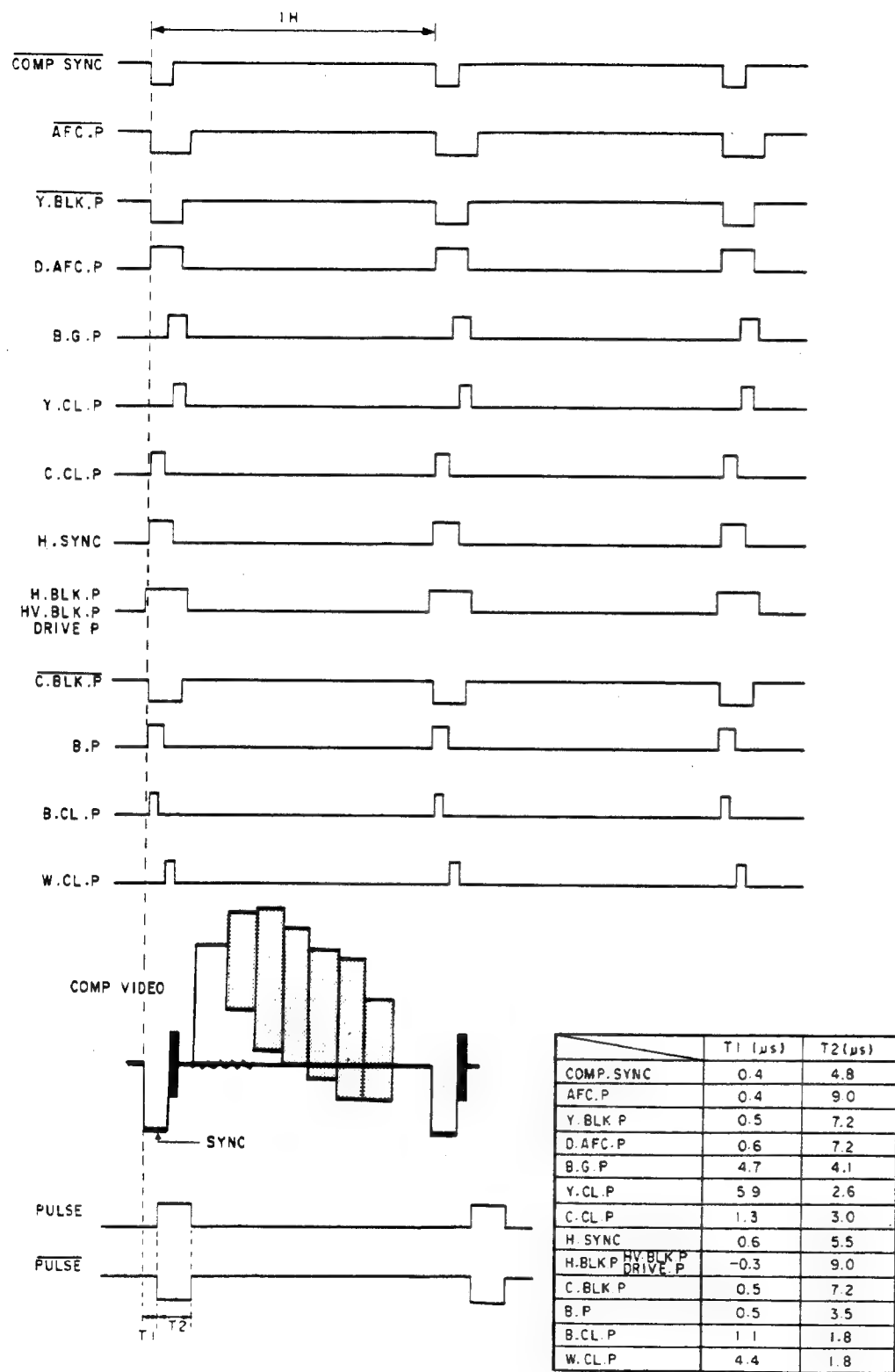


Figure 7

FIELD 1 VERTICAL BLANKING

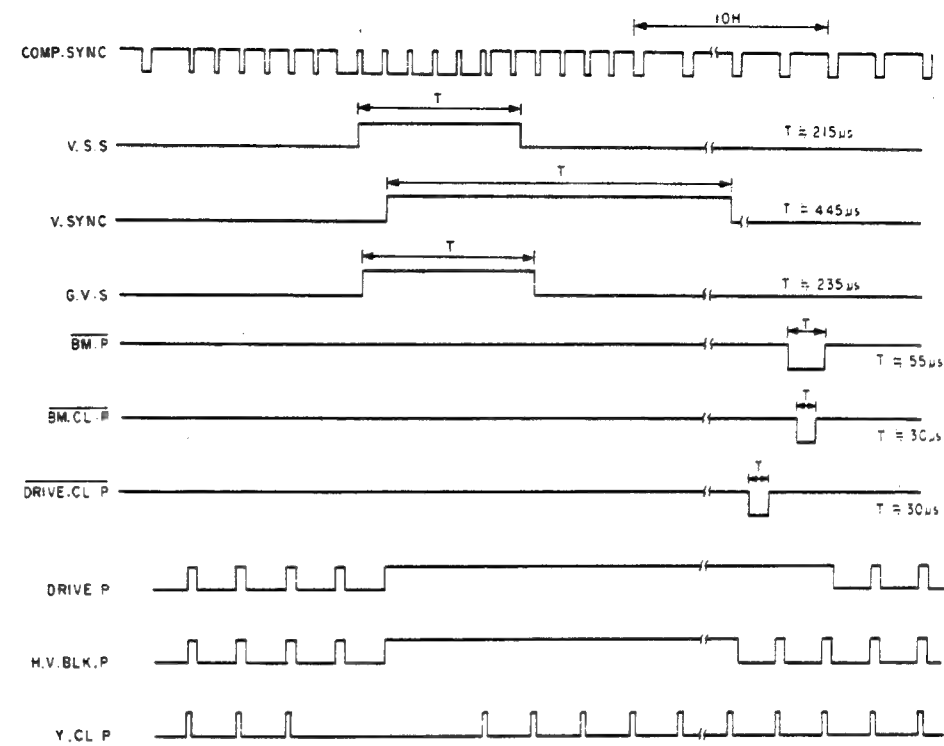


Figure 8

FIELD 2 VERTICAL BLANKING

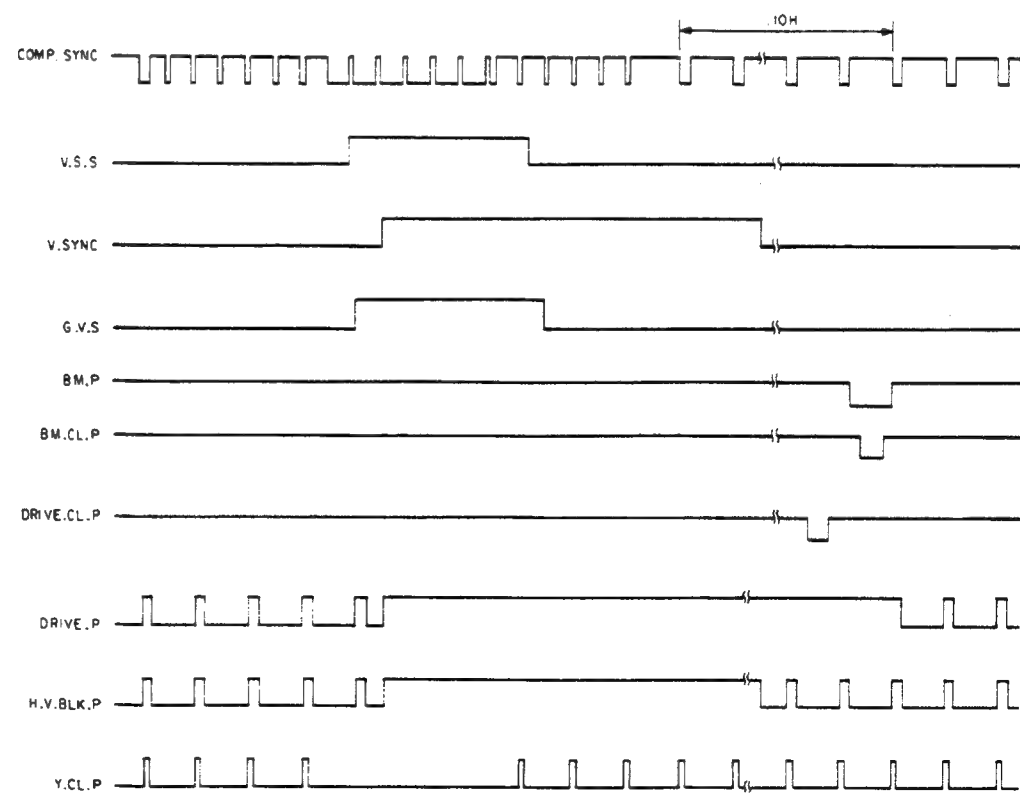


Figure 9

3-6. BK BOARD

Following are described about Red channel. Green and Blue channel are the SAME.

3-6-1. Red Drive Amplifier, Red Buffer

This circuit drives final stage of video output amplifier. Gain is approx. 2

3-6-2. Red Video Output Amplifier and Buffer

This is the final stage amplifier to obtain amplitude enough to drive cathode of CRT.

Gain is approx. 11

The amplified signal is input to the RED cathode of CRT through the next stage's buffer. At this final stage's buffer, the current source (Q107) is applied.

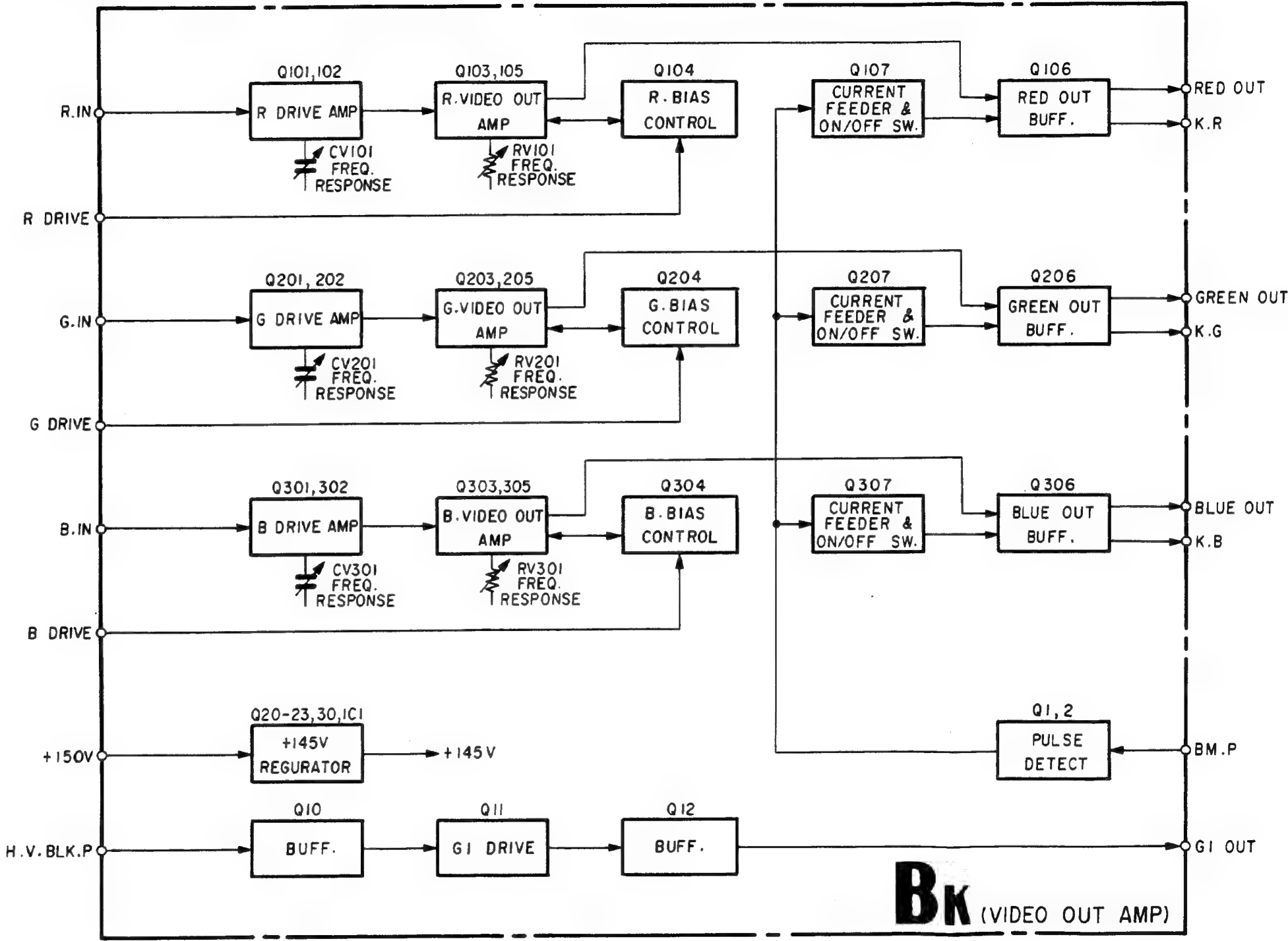
A B.M.P signal of positive polarity is input to the base of Q107. For this B.M.P period, Q107 is cut off, and the current is consequently not supplied to the buffer. So, the only current supplied from cathode is flown from emitter to collector of Q106 in this period.

This board outputs the Q106 collector current as K.R.

3-6-3. H.V. Blanking Circuit

H.V.BLK. pulse is amplified by G1 drive circuit and it is fed to the G1 of CRT through the buffer.

BLOCK DIAGRAM OF BK BOARD



3-7. Beam control Circuit (BI, BK BOARDS)
(Same as Green and Blue)

Block diagram is shown in Figure 10.

3-7-1. Detection of Cathode Current and I-V Conversion
(BI BOARD)

Cathode current is detected as a voltage by using IC105 (1/2)

3-7-2. Red BM. CURRENT Control (BI BOARD)

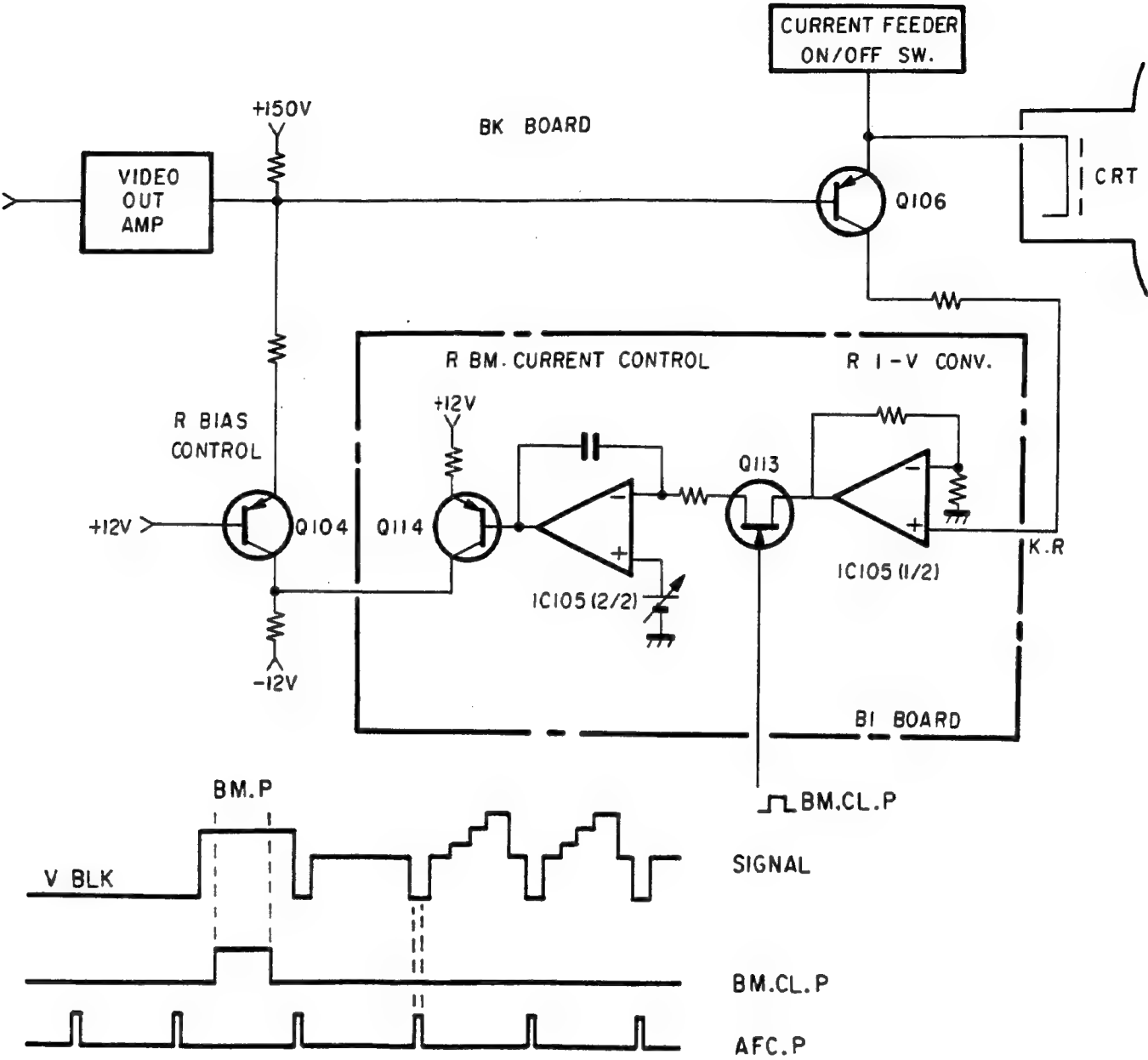
BMP is inserted in the signal during vertical blanking in BI board. This BMP is detected as a cathode current and sampled by BM CLP applied to FET Q113.

This BM. CURRENT control circuit controls the base voltage of transistor Q114 so that converted voltage from cathode current and the reference voltage may match.

3-7-3. Red Bias Control Circuit (BK BOARD)

In the R BIAS control circuit on the BK board, emitter current of Q104 is controlled according to the variation of Q114 base voltage on the BI board.

Therefore, the base voltage of Q106 changes so that the black level of signal that is input to the cathode of CRT is controlled.



3-8. NTSC COMB FILTER (BT BOARD) (BVM-1916 ONLY)

3-8-1. 3 Line Dynamic Comb Filter (Fig. 10)

The fed video signal is band limited by a low-pass filter. (This signal is hereinafter referred to as the OH signal.) The OH signal becomes the signal which is 1H (63.556 μ sec) delayed by the 1H delay circuit (1H delayed signal) and the signal which is 1H further delayed by the 1H delay circuit (2H delayed signal). The OH, 1H, and 2H signals are band limited by the respective band-pass filters (center frequency: fs) for delay of $\lambda/2$ (140 nsec). The 1H signal is further $\lambda/2$ delayed. The OH+ $\lambda/2$, 1H, 1H+ $\lambda/2$, 1H+ λ and 2H+ $\lambda/2$ (A, B, C, D and E of the block diagram) at each point are separated into chroma signals only by the correlation circuit (IC501). The luminance signal is separated with the chroma signal subtracted from the 1H signal.

3-8-2. 2 Line Symple Comb Filter

The chroma signal is separated with the OH+ $\lambda/2$ and 1H+ $\lambda/2$ signal subtracted, and the luminance signal is separated by subtracting the chroma signal from the OH signal.

3-8-3. 1H Delay Circuit (Fig. 11)

The 1H delay circuit consists of two CCD delay lines. These CCD delay lines are used in parallel to attain 1H (63.556 μ sec) signal delay.

3-8-4. Band-pass Filter (Fig. 12)

The band-pass filter consists of a delay line. It performs band limiting with the group delay kept constant.

3-8-5. Correlation Circuit (IC501) (Fig. 13)

The correlation circuit consists of a limiter circuit which is common to emitters to perform separation of a chroma signal.

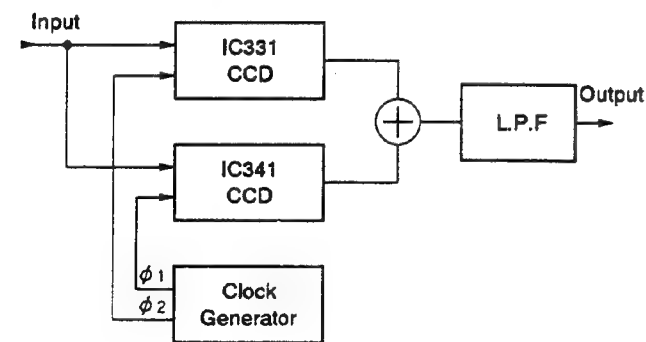


Figure 11

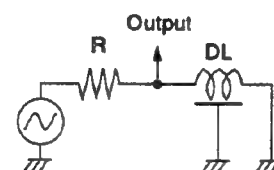


Figure 12

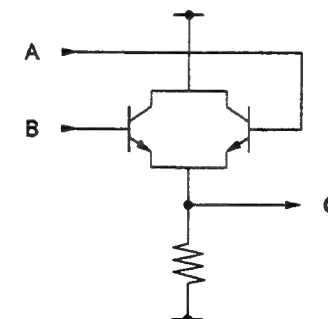


Figure 13

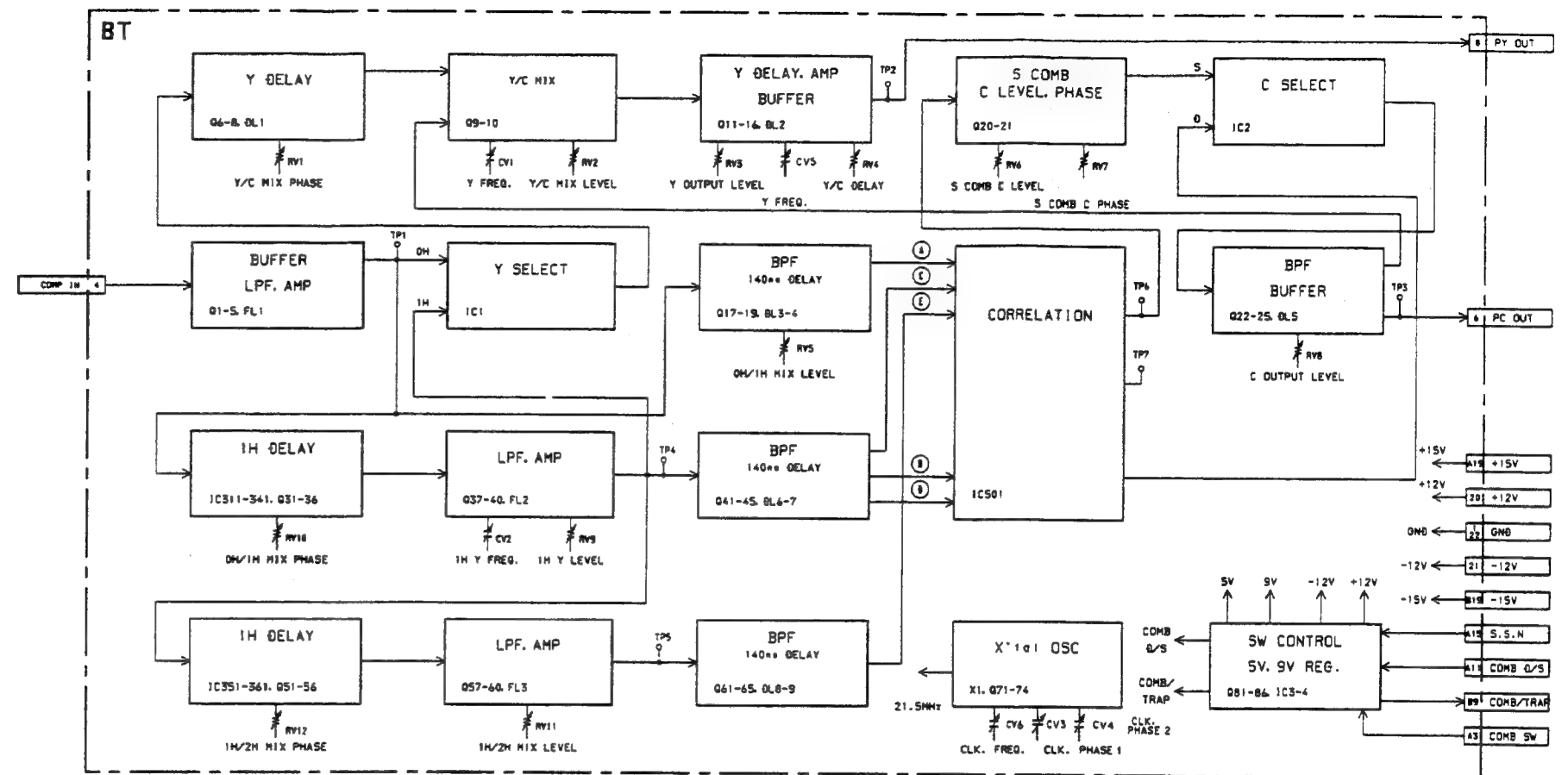


Figure 10

(BVM-1916 ONLY)

3-9. NTSC DEMODULATOR, Y TRAP CIRCUIT (BC BOARD)

The composite video signal (NTSC) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 3.58MHz trap circuit with Y signal and to band pass filter with chrominance signal.

3-9-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R18, capacitor C7, C8, inductor L3 and transistor Q5.

The center frequency of this filter is adjusted to the subcarrier frequency (3.58MHz) by L3, and chrominance signal is derived from Q5.

This circuit selects comb filter (BB board) mode or notch filter mode by a push of button on the front panel. When comb filter mode is selected, comb switch circuit composed of transistor Q103 and Q104 activates and base voltage of Q5 goes down to -12V and Q15 is cut off and then chrominance signal (Pure C) is provided from comb filter circuit to IC2.

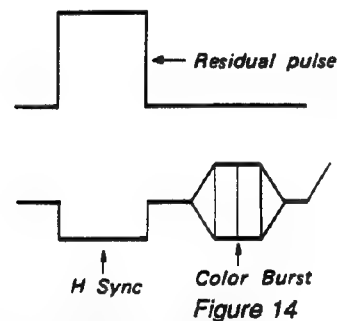
3-9-2. Residual SW Circuit

The chrominance signal derived at transistor Q5 is fed to analog switcher IC2 (Pin 7).

When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin 3) of IC2 and screening is performed during H sync period.

When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate.

When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.



3-9-3. Chroma Amplifier Circuit

The level of chrominance signal from residual switch circuit (IC2 pin 4) is divided by resistor R85 and R86 and is fed to chroma amplifier circuit (Q6, Q7, Q8).

The gain of this amplifier is almost 1 and this amplifier has 2 outputs. They are non-inverted signal and inverted signal.

Non-inverted signal is fed to R-Y input terminal (IC1 pin 3) of demodulator and inverted signal to B-Y input terminal (IC1 pin 2).

3-9-4. Phase Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q9, Q10, Q11, Q12, D2).

In this circuit, a variable capacitance diode (D2) is used to control the phase of color burst signal.

Anode voltage of D2 is applied by variable resistor RV2 and preset adjustment of phase is made by this variable resistor.

When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D2 via analog switcher (IC2 Pin 3). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal.

Analog switcher IC3 (2/3) activates to make short-circuit between input terminal pin 13 and output terminal pin 14, only when COLOR STANDARD SELECTOR in the right side of drawer is selected to NTSC and otherwise pin 13 kept open circuit.

As above phase controlled chrominance signal is derived from emitter of transistor Q12 and burst signal in this signal is gated by IC3 (1/3). The gated burst signal is fed to the burst input terminal pin 11 of demodulator IC1.

3-9-5. NTSC Demodulator

Block diagram of IC1 used for NTSC demodulator is shown in Figure 15.

This IC is designed for use of NTSC demodulator.

When chrominance signal is fed to pin 1, 2 and pin 3, color burst signal to pin 11 and Burst Gate Pulse (B.G.P) to pin 13. R-Y and B-Y color difference signals are obtained at output terminals pin 22 and pin 24.

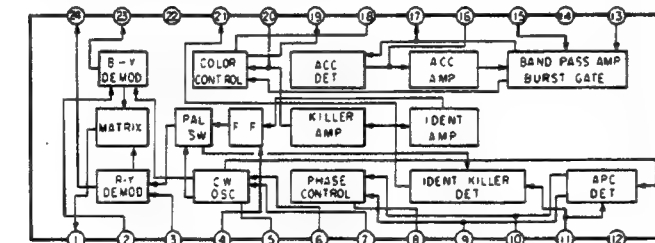
The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90.

Local oscillator (3.58MHz) is formed by CW oscillator in IC1 connected to the terminal pin 5, 6, 7, 8 and external circuit.

The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrier frequency 3.579545MHz.

Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin 9 and 10 local oscillator is controlled by APC circuit.

The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.



Block diagram of NTSC demodulator

Figure 15

3-9-6. 3.58 MHz Trap Circuit, Phase Compensation, Y Delay Correction Circuit

The composite video signal from emitter of transistor Q1 is fed to 3.58MHz trap circuit composed of resistor R5, R6, R7, capacitor C1 and inductor L1.

Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency.

Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4)

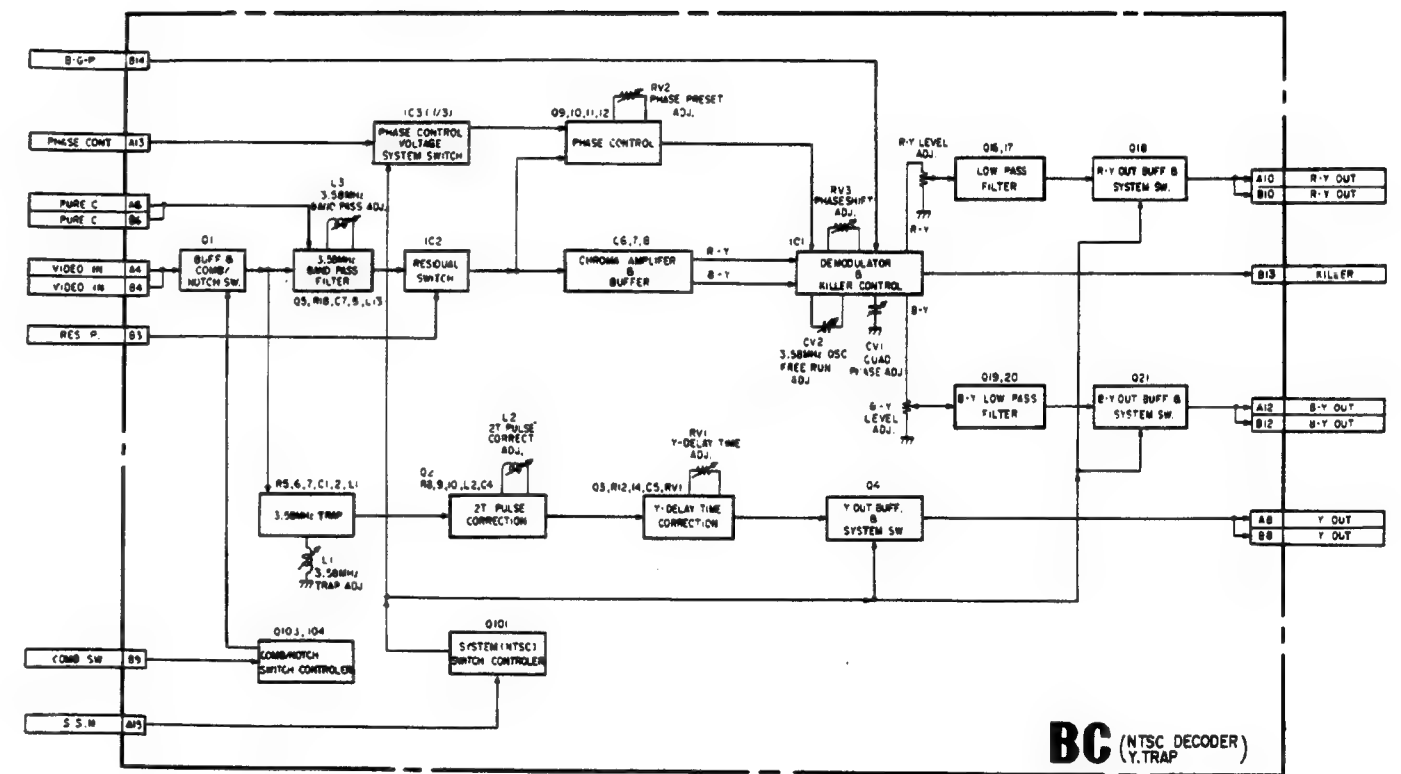
This circuit compensates phase delay of the signal at high frequency due to the trap circuit.

Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

3-9-7. Color Standard Selector

When NTSC system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101 is cut off and +12V line power source is not supplied to the demodulator circuit.

BLOCK DIAGRAM OF BC BOARD



(BVM-2016P ONLY)
3-10. PAL DEMODULATOR, Y TRAP CIRCUIT
(BD BOARD)

The composite video signal (PAL) supplied from BA board is fed to transistor Q1 (buffer), then is supplied to the 4.43 MHz trap circuit with Y signal and to band pass filter with chrominance signal.

3-10-1. Chroma Band Pass Filter

The composite video signal obtained from at the emitter of transistor Q1 is fed to the Band pass filter composed of resistor R12, capacitor C7, C8, inductor L3 and transistor Q5. The center frequency of this filter is adjusted to the subcarrier frequency (4.43 MHz) by L3, and chrominance signal is derived from Q5.

3-10-2. Residual SW Circuit

The chrominance signal derived at transistor Q5 is fed to analog switcher IC2. When switch S1 on BJ board is set to ON position, residual pulse which has almost same phase as H sync is fed to control terminal of analog switcher (pin ③ of IC2) and screening is performed during H sync period. When switch S1 on BJ board is set to OFF position, Low level signal (0V DC) is fed to control terminal and screening action is not performed. Thus residual switch circuit does not activate. When there is residual subcarrier in the video signal, clamp level of color difference signal changes by turning switch S1 ON/OFF and therefore residual subcarrier can be checked on the picture as a color shift.

3-10-3. Chroma Amplifier Circuit

The chrominance signal from residual switch circuit (IC2 pin ④) is fed to chroma amplifier circuit (Q19, Q36). After the chroma signal is amplified by the inversion amplifier (gain: 1X), it is voltage divided by resistors R400 and R314 and then input to the R-Y input terminal (IC1, pin ③) and B-Y input terminal (IC1, pin ②) of the following demodulator circuit via the buffer (Q38).

3-10-4. Phase Control Circuit

The chrominance signal from residual switch is also fed to phase control circuit (Q6, Q7, Q8, Q9, D12). In this circuit, a variable capacitance diode (D10) is used to control the phase of color burst signal. Anode voltage of D10 is applied by variable resistor RV8 and preset adjustment of phase is made by this variable resistor. When the PHASE control on the right side of the front panel is turned, DC level of phase control signal (board terminal A13) changes and this phase control signal is fed to the cathode of D10 via analog switcher (IC5). In this way, Burst phase of chrominance signal is controlled according to the DC level of the phase control signal. When PAL-D is selected with the PAL switch inside the right side drawer, between pins ③ and ④ of IC5 becomes conductive and phase control becomes dependent on RV7, disabling the Phase Control of the right side front panel.

Analog switcher IC5 (1/3) activates to make short-circuit between input terminal pin ③ or ⑤ and output terminal pin ④, only when COLOR STANDARD SELECTOR in the right side of drawer is selected to PAL and otherwise pin ⑤ kept open circuit. As above phase controlled chrominance signal is derived from collector of transistor Q9 and burst signal in this signal is gated by IC6. The gated burst signal is fed to the burst input terminal pin ⑪ of demodulator IC1.

3-10-5. PAL Demodulator

Block diagram of IC used for PAL demodulator is shown in Figure 16. This IC is designed for use of NTSC demodulator. When chrominance signal is fed to pin ② and pin ③, color burst signal to pin ⑪ and Burst Gate Pulse (B.G.P.) to pin ⑬, R-Y and B-Y color difference signals are obtained at output terminals pin ⑬ and pin ⑭. The demodulation axes of this demodulator are R-Y axis and B-Y axis. Variable capacitor CV1 is adjusted so that the phase angles between them are 90°. Local oscillator (4.43 MHz) is formed by CW oscillator in IC1 connected to the terminal pin ⑤, ⑥, ⑦, ⑧ and external circuit. The variable capacitor CV2 is adjusted so that the free run frequency may be subcarrier frequency 4.433619 MHz. Also APC (Automatic Phase Control) circuit is formed by APC section in IC1 connected to the terminal pin ⑨ and ⑩ local oscillator is controlled by APC circuit. The color difference signals demodulated by this IC are fed to low pass filter, where high frequency component is removed, then R-Y and B-Y color difference signals are obtained.

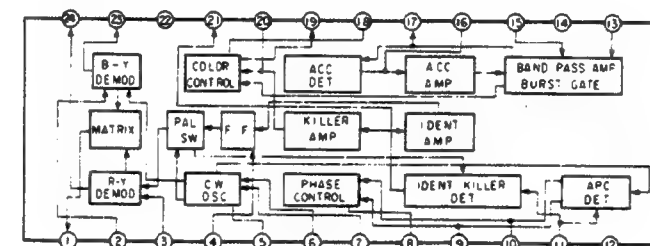


Figure 16

3-10-6. PAL-D Matrix and PAL S/D Switching Circuit

This circuit is further divided into circuits for the R-Y and B-Y signals, but the operation of both circuits is the same. So only the R-Y one will be explained. R-Y signals input from the demodulator circuit are input to Q20 (BUFF) and Q21 (BUFF). The signals input to Q21 are then input to pin ② of the analog switcher (IC5). When PAL-S has been selected, between pins ③ and ⑤ becomes conductive and the signals are supplied to the following circuit via Q33 (BUFF). The signals input to Q20 are formed by IC7 and Q18. Bias is controlled by a clamp circuit and is input to pin ⑬ of the 1H delay line (IC3). The DC level of the input is adjusted to the optimum value by using RV9. IC3, driven by the 10.64 MHz clock signal generated by the clock generator circuit configured with X2, Q34 and Q35, delays the input signal by 1H cycle and outputs it from pin ⑪.

The high frequency component of the signal thus output is removed by the low-pass filter configured with Q22 and Q23, after which the signal is input to the following PAL-D matrix circuit. The PAL-D matrix circuit is configured with R100, R101 and Q24. The signal that was not delayed is input through R100 while the 1H delayed signal is input through R101 at a ratio of 1/2. The PAL-D signal added to the base of Q24 is obtained from its emitter. The signal obtained from the Q24 emitter is input to pin ① of IC5. When PAL-D is selected, between pins ① and ⑤ becomes conductive and the signal is supplied to the following circuit via Q33 (BUFF).

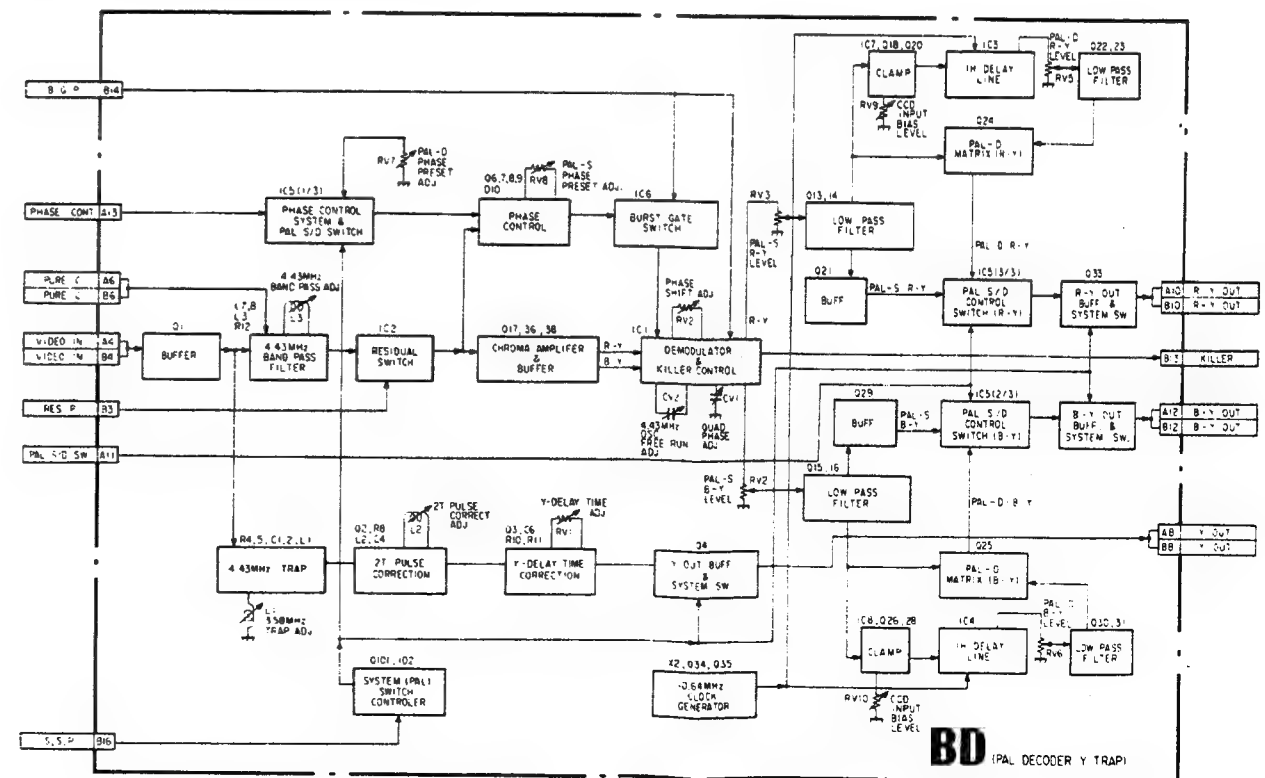
3-10-7. 4.43 MHz Trap Circuit, Phase Compensation, Y Delay Correction Circuit

The composite video signal from the emitter of transistor Q1 is fed to 4.43 MHz trap circuit composed of resistor R5, R6, R7, capacitor C1, C2 and inductor L1. Adjustment of L1 is made so that the resonance frequency of this trap circuit should be subcarrier frequency. Y (Luminance) signal removed subcarrier is obtained at output terminal of the trap circuit and is fed to the phase compensation circuit. (Transistor Q2, resistor R8, R9 R10, inductor L2 capacitor C4) This circuit compensates phase delay of the signal at high frequency due to the trap circuit. Y signal compensated phase delay is fed to Y-delay circuit. In this circuit Luminance/Chrominance time error is compensated by delay line.

3-10-8. Color Standard Selector

When PAL system is not selected by the COLOR STANDARD SELECTOR in the right side drawer, transistor Q101, Q102 are cut off and ±12V line power source is not supplied to the demodulator circuit.

BLOCK DIAGRAM OF BD (PAL) BOARD



3-11. DA BOARD

- Waveform Generation circuit (IC2, 7, 8, 9, 11, 18, 24, 25)

IC2 is a waveform generator. With the input of both horizontal and vertical sync signals, this IC generates the following signals:

- H rate saw tooth waveform signal (HS)
- H rate parabolic waveform signal (HP)
- V rate saw tooth waveform signal (VS)
- V rate parabolic waveform signal (VP)
- Modulated waveform signal
- H saw × V saw (HS × VS)
- H saw × V parabola (HS × VP)
- H parabola × V saw (HP × VS)
- H parabola × V parabola (HP × VP)
- H.SW PULSE, V.SW PULSE

H.SW and V.SW pulses are those which rise just in the middle of the trace period and fall in the retrace period.

- Scan Switching circuit (IC3, 4, 5, 6)

In the scan switching circuit, NORMAL, UNDER or SET-UP scanning is performed.

In H.SAW GEN. circuit, the H rate saw wave is output by the integrator of IC15 using the H.SW pulses from IC2 as reset pulses. The H rate saw thus generated is delayed about 1/2H as compared with that of the IC2.

- H.BLK. GEN., H. DRIVE GEN. circuit (IC17, 18)

In the H.BLK.GEN. circuit, the H.BLK.P required for horizontal blanking is generated from the H.SAW waveform signal which is output signal of IC13. The H.V.DRIVE GEN. is the same. In the H.DELAY and H.PHASE circuits, like H.BLK.GEN., the D.AFC.P is output by comparing the H.SAW output signals of IC13. Further, this circuit performs H. PHASE and H.DELAY by not changing the pulse width of D.AFC.P but changing only the position.

- SIN. GEN., COS. GEN. circuits (IC7, 8)

In the SIN.GEN. and COS.GEN. circuits, the SIN approximate wave is output by integrating the V rate parabola once and the COS approximate wave is output by integrating it twice.

- H.WIDTH circuit (IC3, 11)

In the H.WIDTH circuit, the correction waveforms such as SIDE PIN, SIDE PIN TILT, H.WIDTH, etc. are output by adding VP, VS, H. SIZE, etc. (H.WIDTH)

- H. LIN circuit (IC13)

In the H.LIN circuit, correction waveforms such as H.LIN.GAIN, H. LIN. BALANCE, etc. are output by adding HP, HS, etc. (H. LIN)

- V.SAW circuit (IC12)

In the V.SAW circuit, the correction waveforms such as V cycle saw wave, V.LIN. GAIN, V.LIN. BALANCE, V GEN.TX BOW, TOP BOTTOM PIN, etc. are output by adding VS, DC, V.SIN, VP, HS, HS × VS, etc. (V.SAW)

- H.CENT circuit (IC16)

In the H.CENT circuit, the correction waveforms of H.CENT, Y BOW, Y. TILT are output by adding DC, VP and VS.

- X.CONV circuit (IC9, 14)

In the X.CONV circuit, the correction waveform of vertical misconvergence is output by adding VP and DC which are generated separately in upper side and lower side of the picture screen.

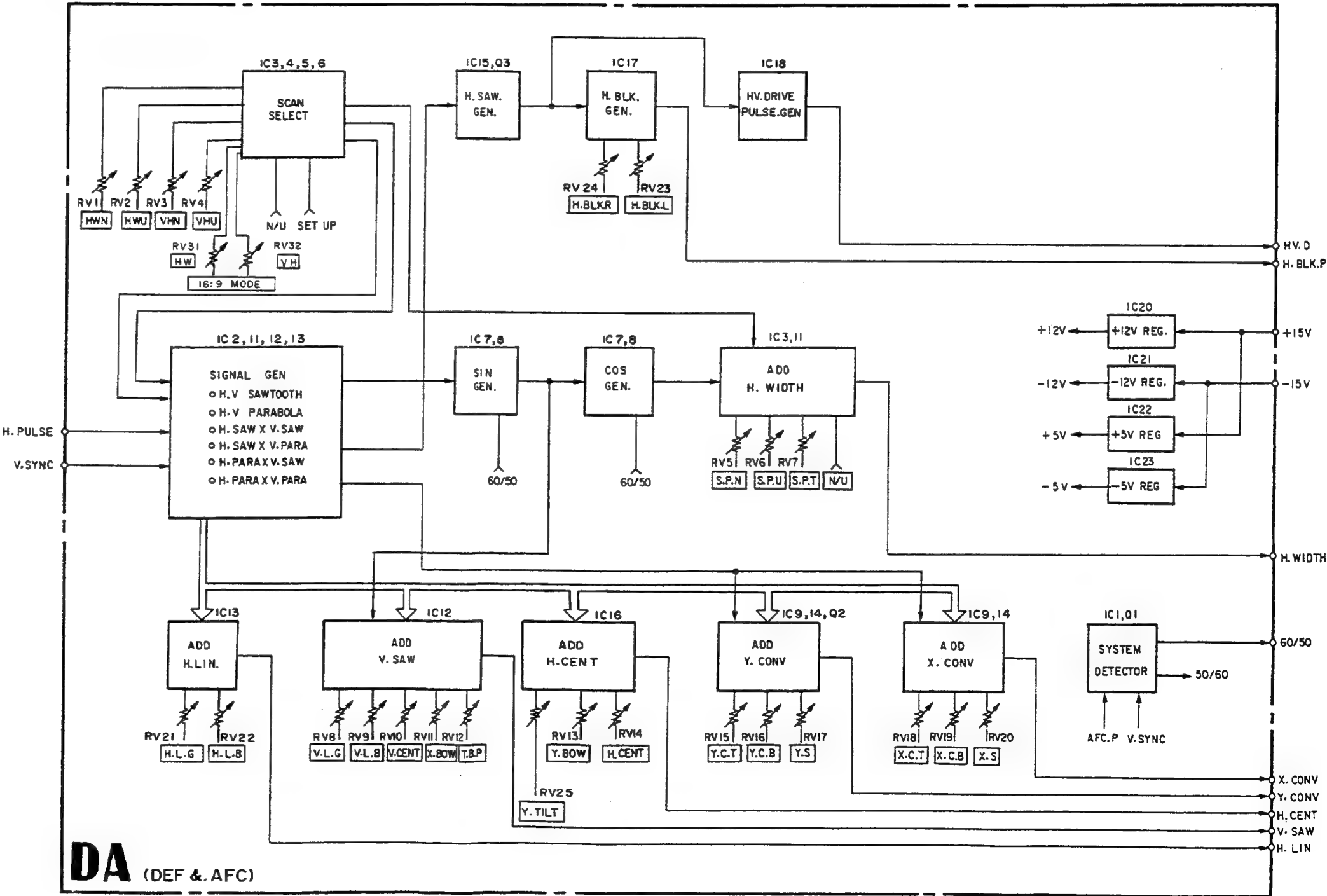
- Y.CONV circuit (IC9, 14, Q2)

In the Y.CONV circuit, the correction waveform of horizontal misconvergence is output by adding VP and DC which are generated separately in upper side and lower side of the picture screen.

- System Detector circuit (IC1, Q1)

With the input at both horizontal and vertical sync signals IC1 distinguishes between 525/60 and 625/50.

BLOCK DIAGRAM OF DA BOARD





3-13. H. OSCILLATOR AND H.FREQUENCY CONTROL (DB BOARD)

IC204 is an IC which incorporates the H.OSC and H.AFC circuits. In this IC, the frequency and phase of H.OSC are controlled by comparing the phases of D.AFC.P and H.SYNC. This unit can vary the AFC time constant by the AFC, sw.

3-14. HIGH VOLTAGE PROTECTOR CIRCUIT, BEAM CURRENT PROTECTOR CIRCUIT AND CRT PROTECTOR CIRCUIT (EB BOARD)

3-14-1. High Voltage Protector

The detection voltage for the high voltage protector is obtained by directly by dividing HV voltage with resistors in HVR. For the high voltage protector circuit when this detection voltage rises more than the reference voltage by the high voltage rise output of the comparator IC4 (1/2) becomes high and the drive pulse of the high voltage converter is cut off by making D27 (SCR) gate on. Consequently, the high voltage output circuit is stopped.

3-14-2. Beam Current Protector ①

The anode current is converted to the voltage by resistor R121 in which the current flows in the secondary winding of FBT. For the high voltage current protector, when the anode current increases extraordinarily, the output of comparator IC4 (2/2) becomes high and the drive pulse of the high voltage converter is cut off by making D27 (SCR) gate on. Consequently, the high voltage output circuit is stopped.

3-14-3. Beam Current Protector ②

The anode current is converted to the voltage by resistor R124 in which the current flows in the secondary winding of FBT. For the high voltage current protector, when the anode current increases extraordinarily, the output of comparator IC6 (1/2) becomes high and the drive pulse of the high voltage converter is cut off by making D51 (SCR) gate on. Consequently, the high voltage output circuit is stopped.

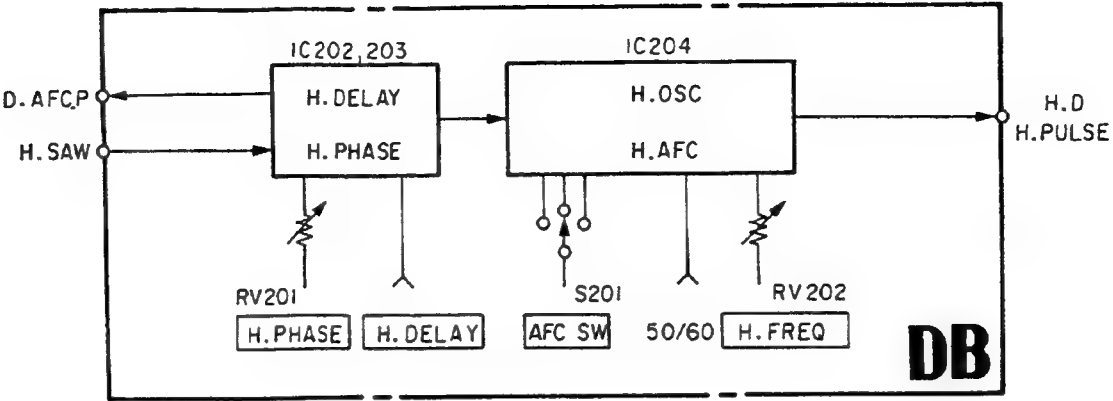
3-14-4. CRT Protector

The CRT protector circuit is to prevent the CRT from burning when the vertical deflection circuit is stopped by some causes. For the CRT protector circuit, because the retrace pulse of V out disappears when the vertical deflection circuit is stopped, Q20 is turned off and the output of comparator IC6 (2/2) becomes high, then, with D27 (SCR) gated on to cut off the drive pulse of the high voltage converter circuit, the high voltage output circuit is stopped.

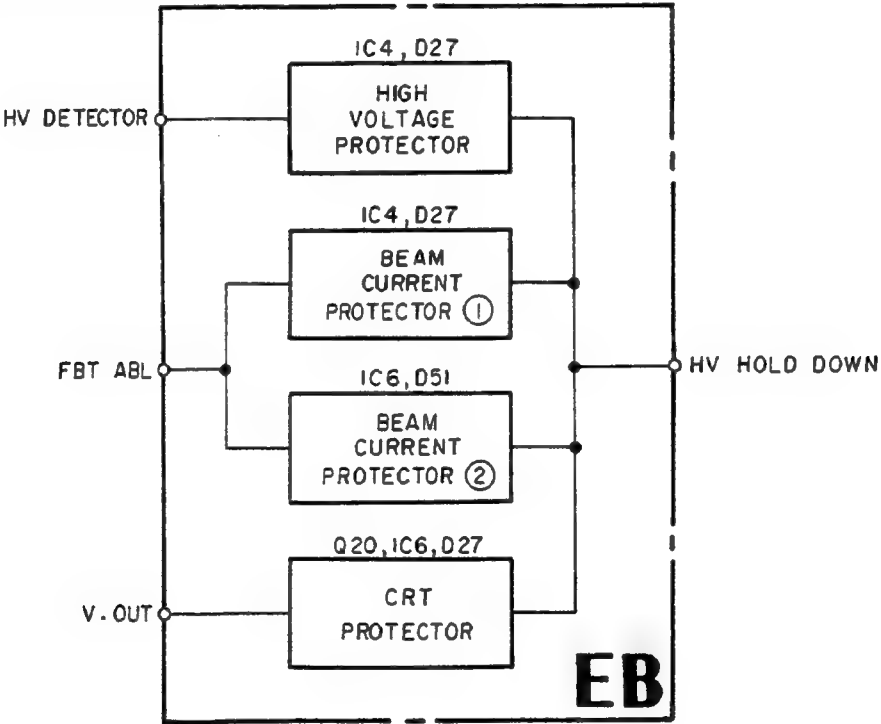
3-15. VERTICAL CONVERGENCE OUTPUT CIRCUIT (EC BOARD)

The vertical convergence output circuit drive the neck twist coil. The correction waveforms of vertical misconvergence is generated on the DA BOARD.

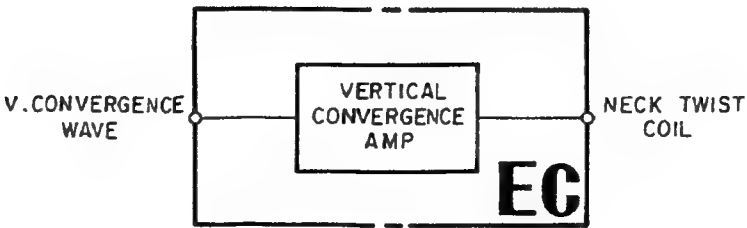
BLOCK DIAGRAM OF DB BOARD



BLOCK DIAGRAM OF EB BOARD



BLOCK DIAGRAM OF EC BOARD



3-16. POWER SUPPLY CIRCUIT (GA, GB BOARDS)

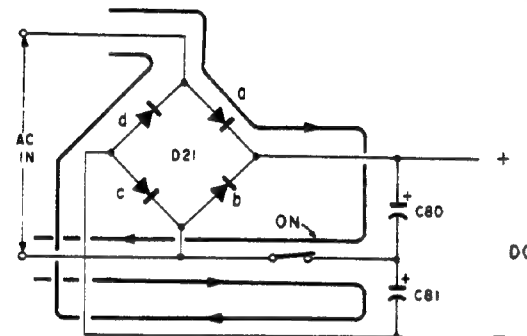
3-16-1. AC Power Supply, Rectifier Circuit

Voltage selector located at the rear side of the unit should be selected to the local line voltage (AC 100/120V or 220/240V). In case of AC 100/120V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a double multiple rectifier.

See Figure 17(a).

In case of AC 220/240V selected by voltage selector, rectifier D21 capacitors C80 and C81 operate as a full-wave rectifier.

See Figure 17(b).



AC IN Passes through D21d and charges to C81.

Passes through D21a and charges to C80.

Figure 17(a)

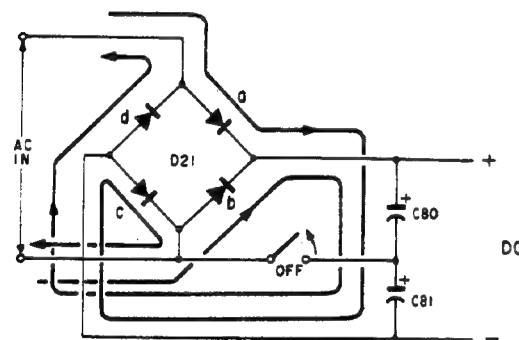


Figure 17(b)

3-16-2. Degauss Circuit

There are 2 posistors (PTH1, PTH2) in the degaussing circuit. One is used for AC 100/120V operation, the other is for AC 220/240V operation, these posistors are switched by voltage selector. This degaussing circuit is turned ON and OFF by using Relay (RY1) automatically.

When power is turned ON, Automatic degaussing starts to work and a few seconds later stops automatically.

Also Manual degaussing is available if necessary after a few minutes power is turned on when posistor (PTH1 or PTH2) gets cool down. This manual degaussing is operated by a push of button (Degauss Switch) at the left of the front panel.

When degaussing circuit starts to work, Q11 transistor turns on by time constant circuit composed of resistors R88, 91 and capacitor C74. Q11 drives Q12 transistor. Relay (RY1) is driven by Q12. Time constant circuit keeps degaussing circuit to activate for several seconds until degaussing is finished.

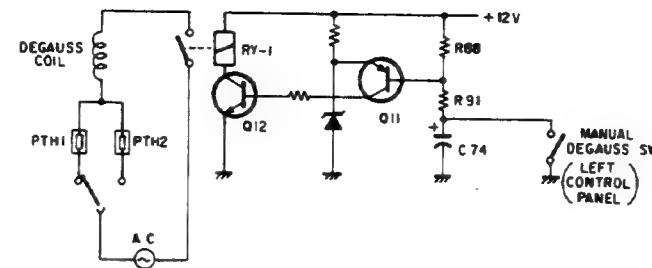


Figure 18

3-16-3. Starter Circuit

Blocking oscillator composed of integrated circuit IC1 and transformer T4 operates when power is turned on. DC voltage obtained by diode D7 and capacitor C57 as a rectifier at the secondary circuit of T4 is supplied to IC2 and IC3, when AC voltage is higher than 50 ~ 70V (voltage selector at 100/120V position). Then power supply regulator starts to work and +15V line power supply is provided to IC2 and IC3 via diode D20, also voltage from T4 stops providing power supply to IC2 and IC3 because blocking oscillator is shut down by voltage generated at primary windings of SRT (Switching Regulator Transformer).

3-16-4. Switching Regulator Circuit

Block diagram is shown in Figure 19. This is half bridge type of switching regulator in this model.

Following Description is the Theory of Half-Bridge Switching Regulator.

DC voltage E_{IN} rectified from AC voltage in AC power rectifier section is divided by capacitor C1 and C2. C1 and C2 have almost same value. Q1 (contains 2 transistors) operates as a switch driven by PWM modulated pulse via T2 (Drive Transformer). Switching current flows through primary windings of T1 (SRT) by switching transistor Q1 via T3 (Current Transformer). Thus output voltages are generated at secondary windings of T1.

Practical Circuit Used in this Model

There are 2 switching regulators in this power supply. One is for low voltage power supply, $\pm 15V$, $\pm 18V$ and $+5V$. The other is for high voltage $\pm 150V$ power supply.

Low voltages are generated by IC2, T1, T2, T3 and Q1.

High voltages are generated by IC3, T6, T7 and Q2

Refer to block diagram

Current Transformer T3 and T7 detects excess current in transistor Q1 and Q2 for the protection of damage.

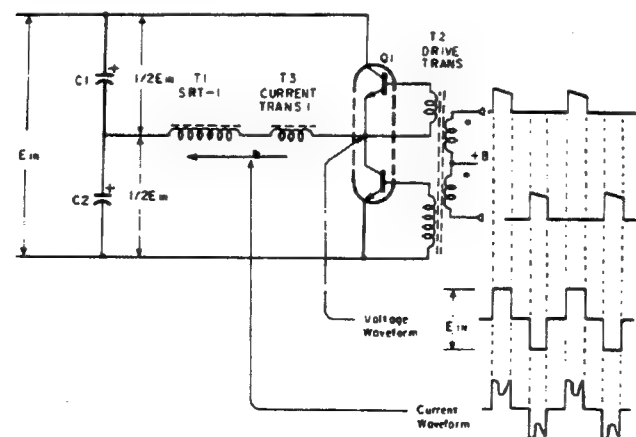


Figure 19

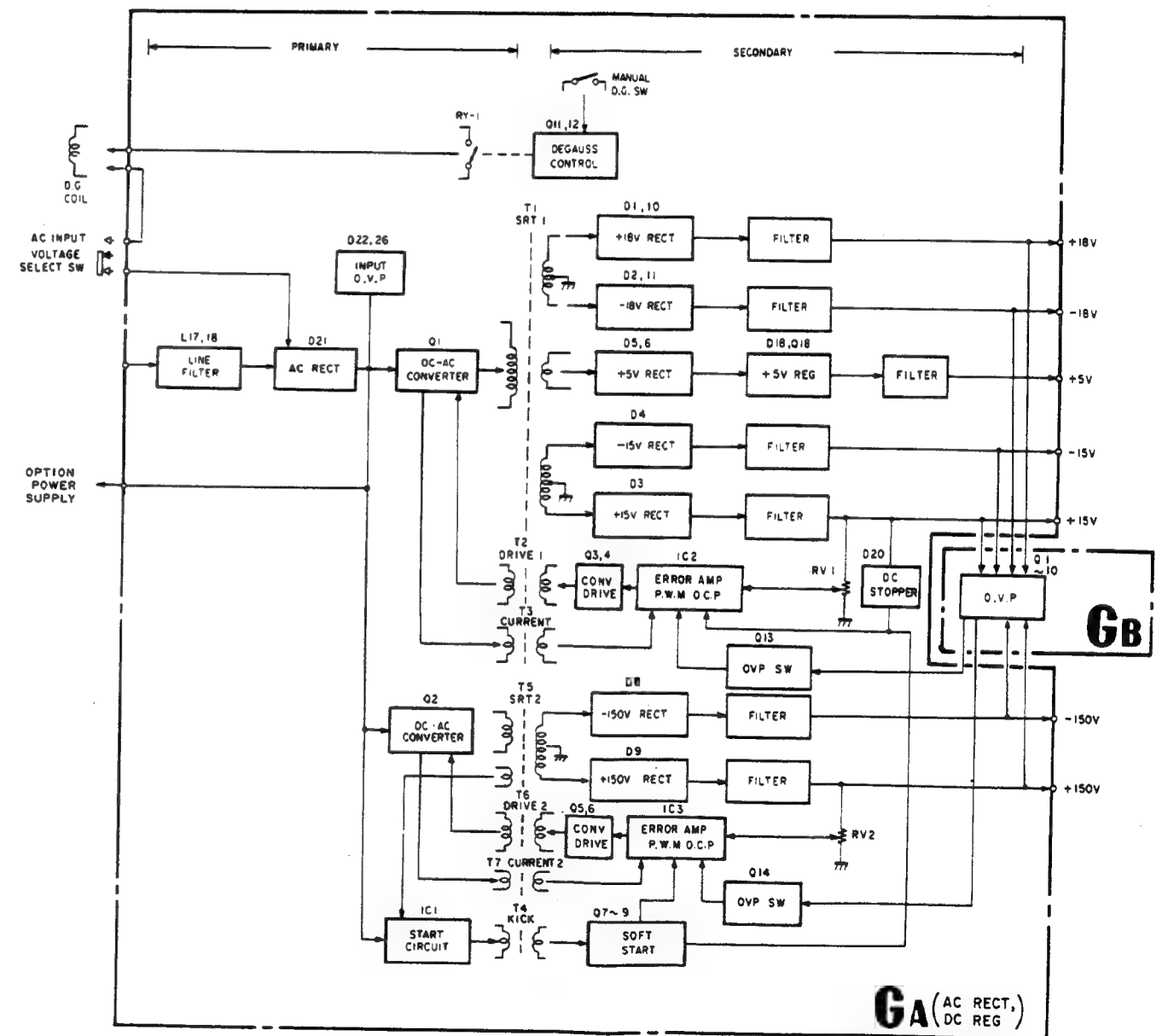
3-16-5. Over Voltage Protector

Daughter board GB is mounted in mother board GA.

GB board works for over voltage protection.

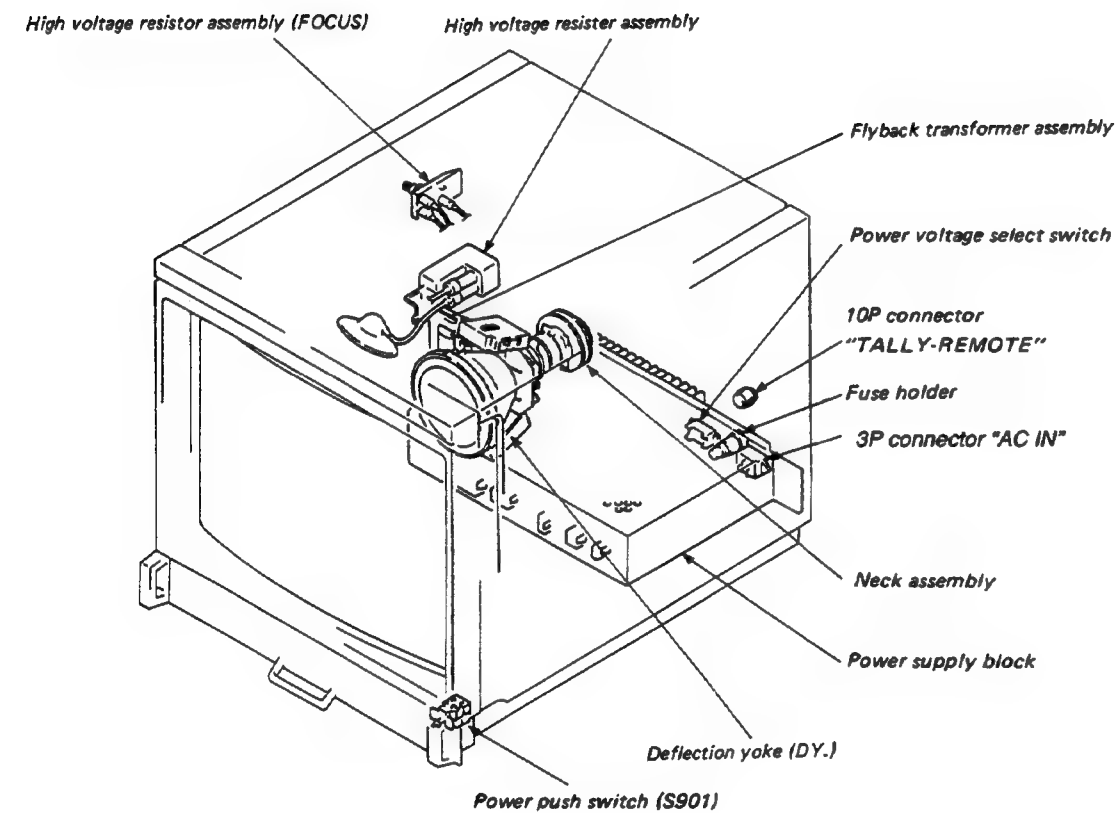
When output voltage gets higher value than predetermined value, over voltage protector activates to prevent damage of unit.

BLOCK DIAGRAM OF GA, GB BOARD

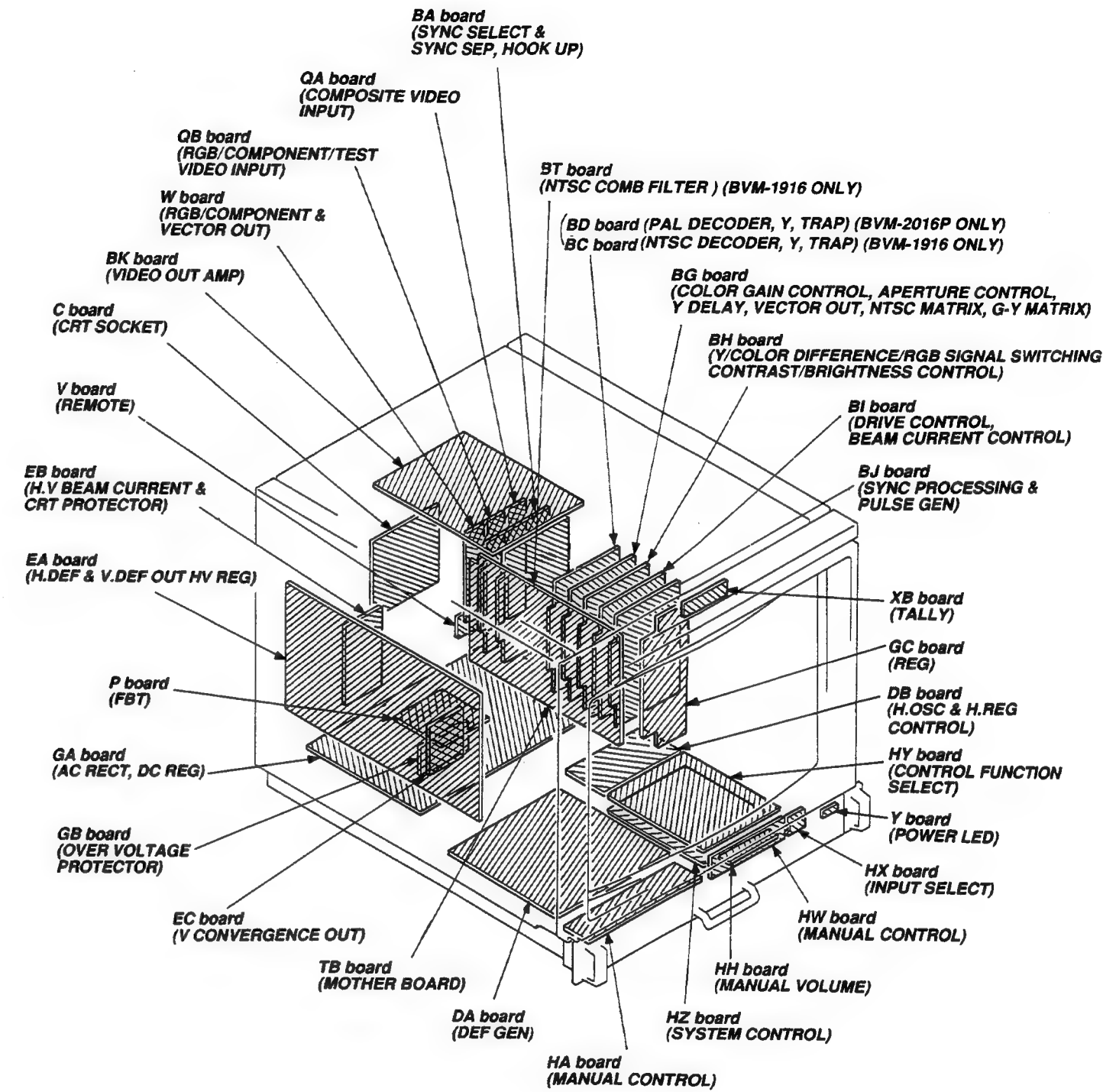


SECTION 4 ADJUSTMENTS

4-1. INTERNAL VIEW



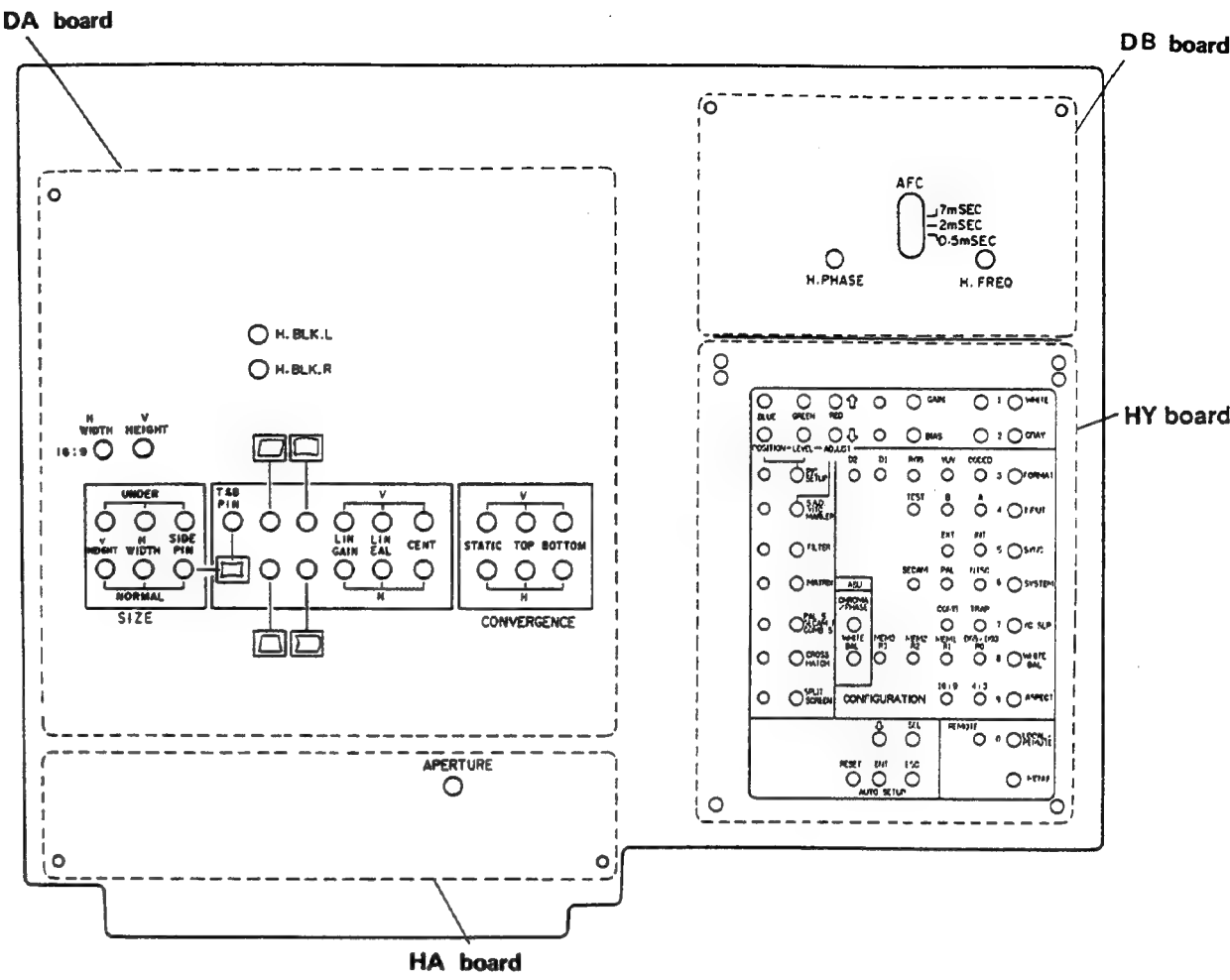
4-2. CIRCUIT BOARDS LOCATION



4-3. QUICK REFERENCE

BOARD SECTION	BA	BC	BD	BG	BH	BI	BJ	BK	BT	C	DA
CIRCUIT DESCRIPTION	3-1	3-19	3-21	3-3	3-5	3-7 3-15	3-9	3-13 3-15	3-17	—	3-23
ADJUSTMENTS	4-21 4-25	4-31	4-61	4-21 4-27	4-21	—	4-19 4-30 4-44	4-45	4-47	—	4-76 4-79
BLOCK DIAGRAM	3-2	3-20	3-22	3-4	3-5	3-7	3-9	3-13	3-17	—	3-23
MOUNTING DIAGRAM	5-15	5-25	5-33	5-35	5-43	5-45	5-53	5-55	5-20	5-71	5-63
SCHEMATIC DIAGRAM	5-17	5-27	5-30	5-37	5-40	5-47	5-51	5-57	5-23	5-66	5-60
ELECTRICAL PARTS LIST	7-1	7-4	7-5	7-8	7-11	7-13	7-16	7-18	7-20	7-24	7-24
BOARD SECTION	DB	EA	EB	EC	GA	GB	GC	HA	HH	HW	HX
CIRCUIT DESCRIPTION	3-27	3-25	3-27	3-27	3-29	3-29	—	—	—	—	—
ADJUSTMENTS	4-79	4-14	4-15	—	4-11	—	—	—	—	—	—
BLOCK DIAGRAM	3-28	3-25	3-28	3-28	3-30	3-30	—	—	—	—	—
MOUNTING DIAGRAM	5-65	5-69	5-71	5-71	5-73	5-72	5-91	5-78	5-78	5-78	5-79
SCHEMATIC DIAGRAM	5-60	5-66	5-66	5-56	5-75	5-75	5-93	5-81	5-81	5-81	5-81
ELECTRICAL PARTS LIST	7-26	7-27	7-29	7-39	7-31	7-33	7-34	7-34	7-34	7-34	7-35
BOARD SECTION	HY	HZ	P	QA	QB	TB	V	W	XB	Y	Z
CIRCUIT DESCRIPTION	—	—	—	3-1	3-1	—	—	—	—	—	—
ADJUSTMENTS	—	—	—	—	—	—	—	—	—	—	—
BLOCK DIAGRAM	—	—	—	3-2	3-2	—	—	—	—	—	—
MOUNTING DIAGRAM	5-80	5-87	5-71	5-90	5-91	5-11	5-92	5-91	5-79	5-79	5-95
SCHEMATIC DIAGRAM	5-81	5-84	5-56	5-93	5-93	5-13	5-93	5-93	5-81	5-81	—
ELECTRICAL PARTS LIST	7-35	7-37	7-39	7-39	7-40	7-40	7-40	7-40	7-40	7-41	7-41

4-4. SUB CONTROL PANEL LOCATION



4-5. SETUP ADJUSTMENT IN CASE OF PICTURE TUBE REPLACEMENT

When the picture tube has been replaced, make the following adjustments. Convergence and white balance are normally adjusted by the potentiometers on the sub control panel.

[Jigs Tools and Measurement Equipment Required]

1. SIGNAL GENERATOR (TEKTRONIX 1410, 1411 Series)
2. COLOR ANALYZER
3. LUMINANCE METER

[Landing adjustment]

1. Connect signal generator and receive a white signal.
2. Set BRIGHTNESS and CONTRAST VRs to the preset position (□).
3. Face the CRT screen toward East (or West) and press the DEGAUSS switch.
4. Set the purity control to the center as shown in Fig. 1-1.

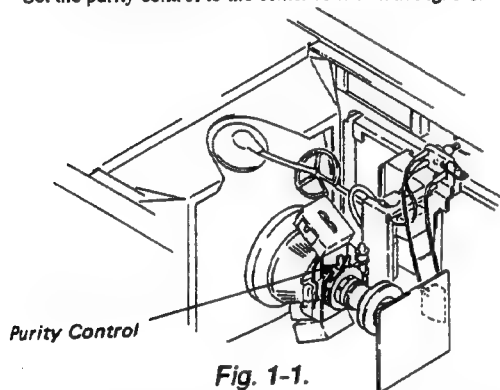


Fig. 1-1.

5. Slide DY (Deflection Yoke) as far forward as possible.
6. Set the neck assembly in the position shown in Fig. 1-2.

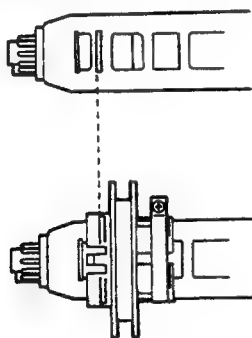


Fig. 1-2.

7. Set the screen to green only (R and B on the FRONT PANEL are in the IN position and G in the OUT position).
8. Turn purity knob as shown in Fig. 1-3 to bring the green on the center of the screen.

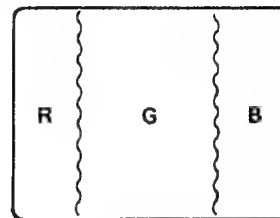


Fig. 1-3.

9. Slide DY back for uniform green raster.
10. Make the screen red only (G and B on the FRONT PANEL are in the IN position and R in the OUT position) and check landing.
11. Make the screen blue only (R and G on the FRONT PANEL are in the IN position and B in the OUT position) and check landing.
12. Adjust DY tilt and tighten DY set-screw.
13. Secure the DY with the spacers. (Fig. 1-4)

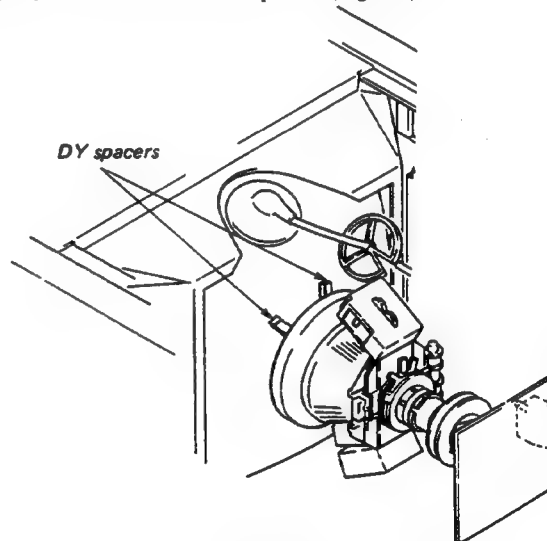
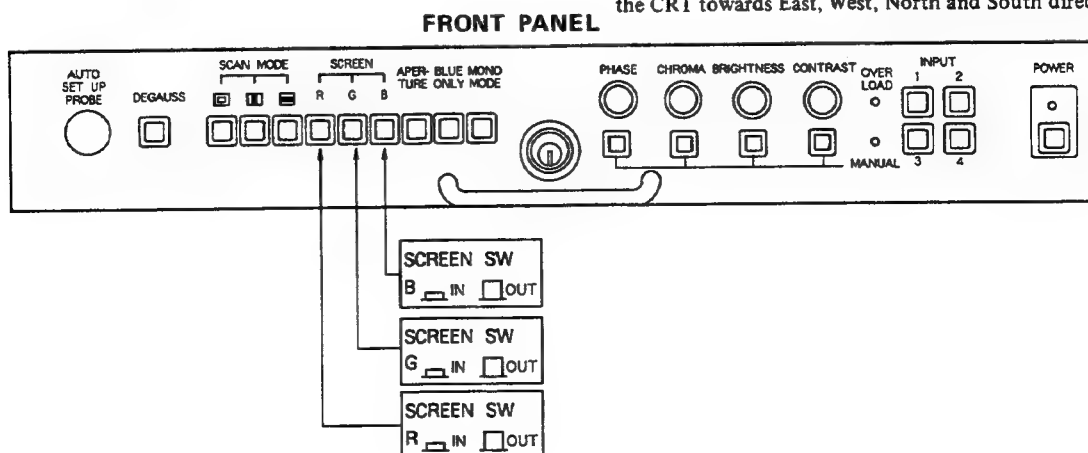


Fig. 1-4.

• Final check

After adjustments, check that there is no mislanding by facing the CRT towards East, West, North and South directions.



[Convergence adjustment]

Preparation:

1. Connect the signal generator to receive the dot signal and crosshatch signal.
2. Adjust with CONTRAST and BRIGHTNESS controls to set to easy-to-monitor position those signals.
3. Set H.STATIC VR (RV17) on the sub control panel of DA Board to the mechanical center.

(1) Horizontal and Vertical Static Convergence

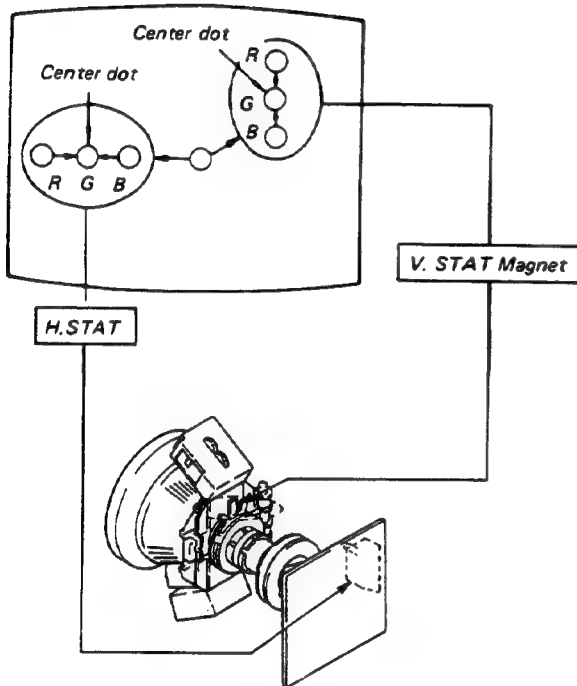
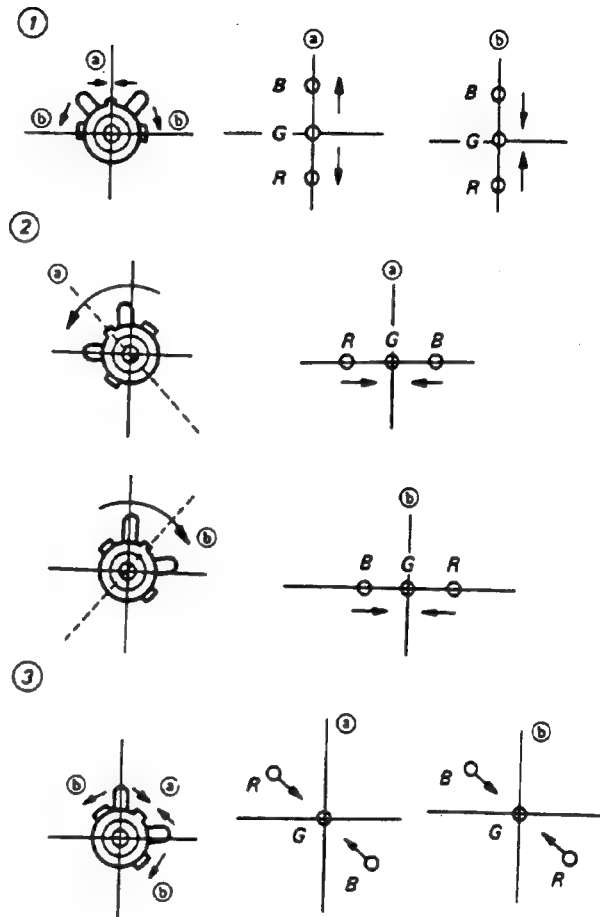


Fig. 1-5

1. Adjust H.STAT VR on the C Board to coincide red, green and blue dots on the center of screen (Horizontal movement)
 2. Adjust V. STAT magnet to coincide red, green and blue dots on the center of screen (Vertical movement)
 3. If the red, green and blue dots do not coincide on the center of screen with H. STAT VR, perform horizontal convergence adjustment using H. STAT VR and V. STAT magnet as shown below. (In this case, H. STAT VR and V. STAT magnet effect each other.)
- Tilt the V. STAT magnet and adjust static convergence to open or close the V. STAT magnet.



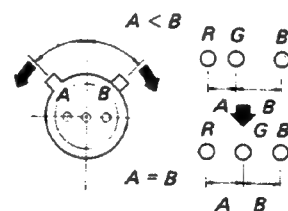
4. When the V. STAT magnet is moved in the direction of arrow (a) and (b), Red, Green and Blue dots move as shown below.



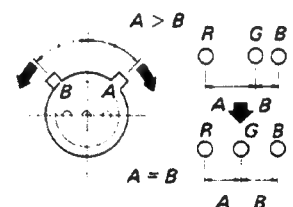
• HMC and VMC correction for Hexapole Magnet.

1. HMC (Horizontal, Mis. convergence) correction and motion of the Electron Beam with the Hexapole Magnet.

HMC correction (A)

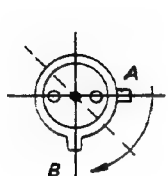


HMC correction (B)

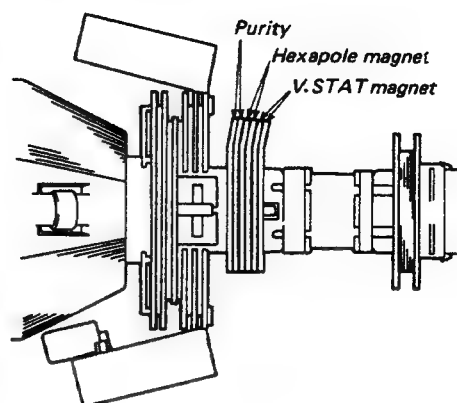
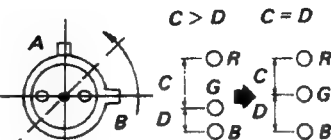


2. VMC (Vertical, Mis, convergence) correction and motion of the Electron Beam with the Hexapole Magnet.

VMC correction (A)



VMC correction (B)



(2) Dynamic Convergence Adjustment

Preparation:

- Before starting, perform Horizontal and Vertical Static Convergence Adjustment.

1. Loosen deflection yoke screw.
2. Remove deflection yoke spacers.
3. Move the deflection yoke for best convergence as shown in Fig. 1-6.
4. Tighten the deflection yoke screw.
5. Install the deflection yoke spacers.

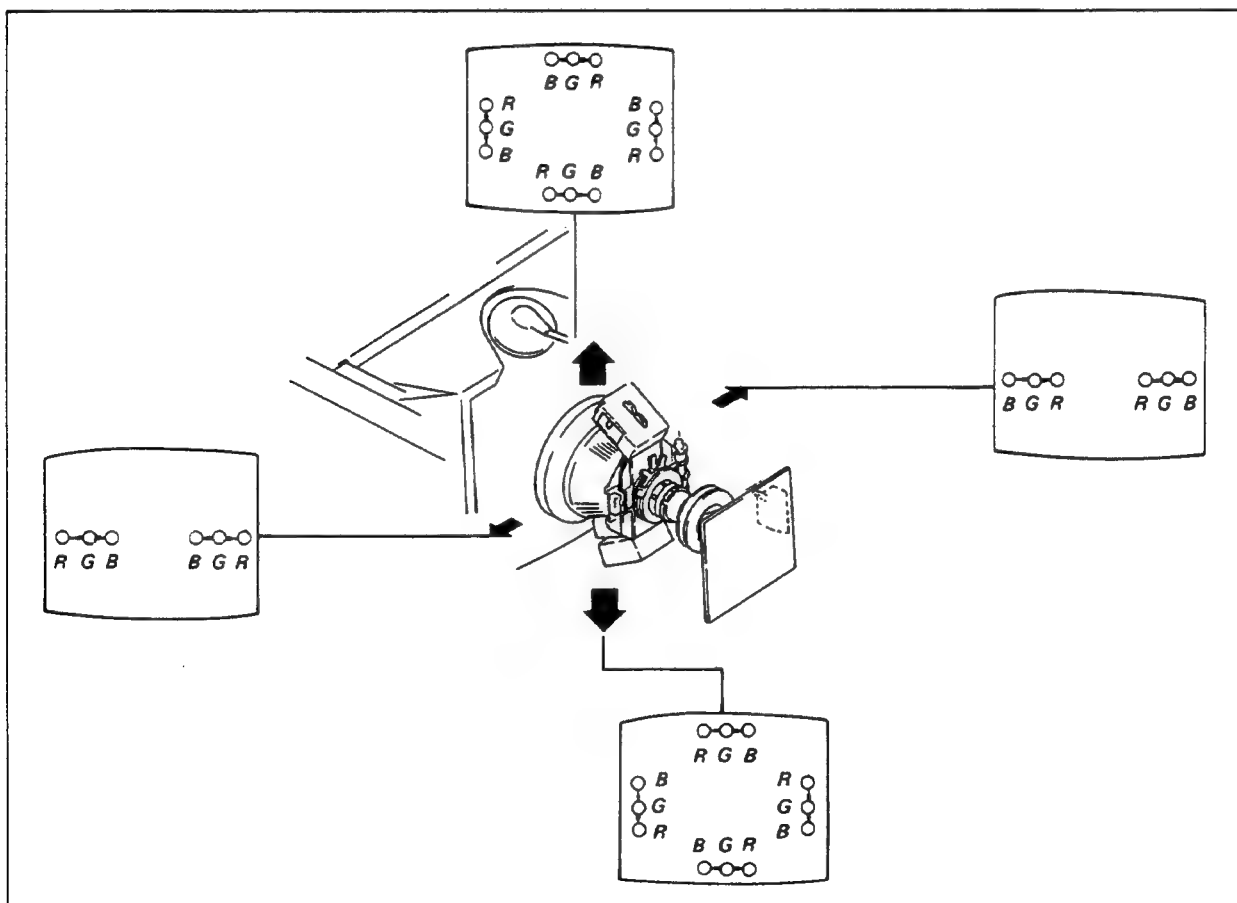
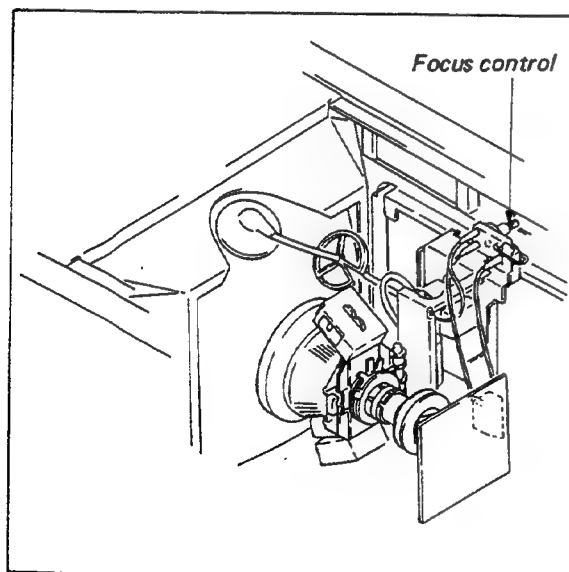
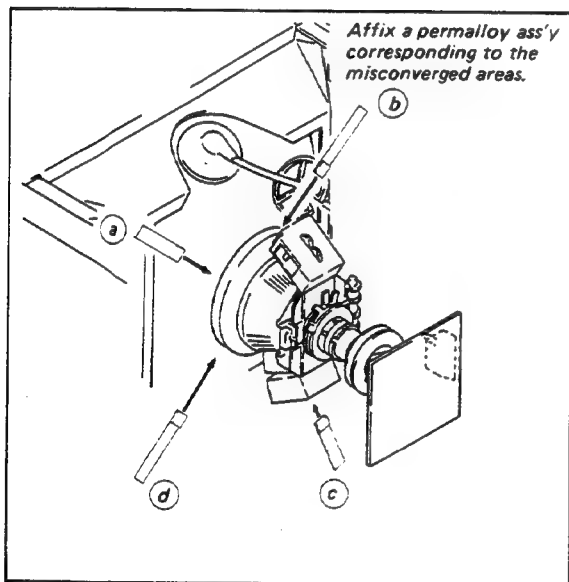
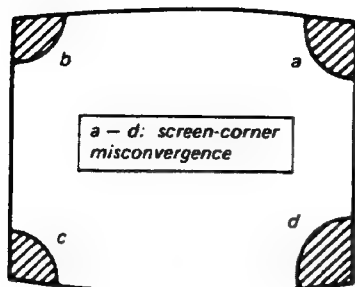


Fig. 1-6

(3) Screen-corner Convergence



[CONVERGENCE PROCESS]

1. UNDER SCAN switch NOR (⏏)
2. Adjust the vertical static convergence with RV20 (X.S) at the sub control panel (DA board) as shown in left of Fig. 1-7.
3. Adjust the horizontal static convergence with RV17 (Y.S) at the sub control panel (DA board) as shown in right of Fig. 1-7.

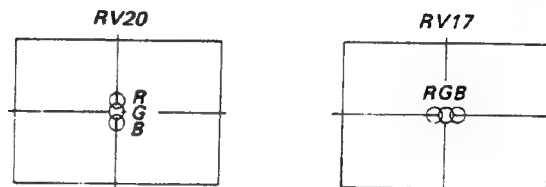


Fig. 1-7

4. Adjust the vertical convergence with RV18 (X.C.T) at the sub control panel (DA board) as shown in left upper corner of Fig. 1-8.
5. Adjust the vertical convergence with RV19 (X.C.B) at the sub control panel (DA board) as shown in left lower corner of Fig. 1-8.

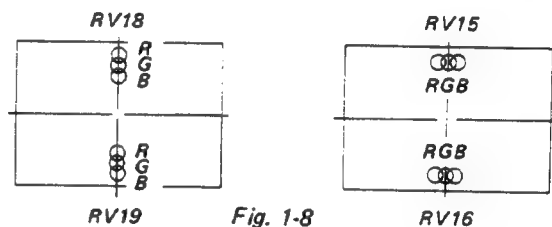


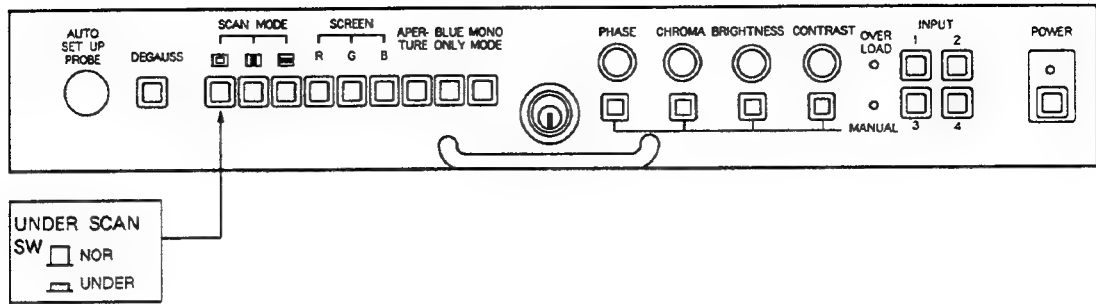
Fig. 1-8

6. Adjust the horizontal convergence with RV15 (Y.C.T) at the sub control panel (DA board) as shown in right upper corner of Fig. 1-8.
7. Adjust the horizontal convergence with RV16 (Y.C.B) at the sub control panel (DA board) as shown in right upper corner of Fig. 1-8.

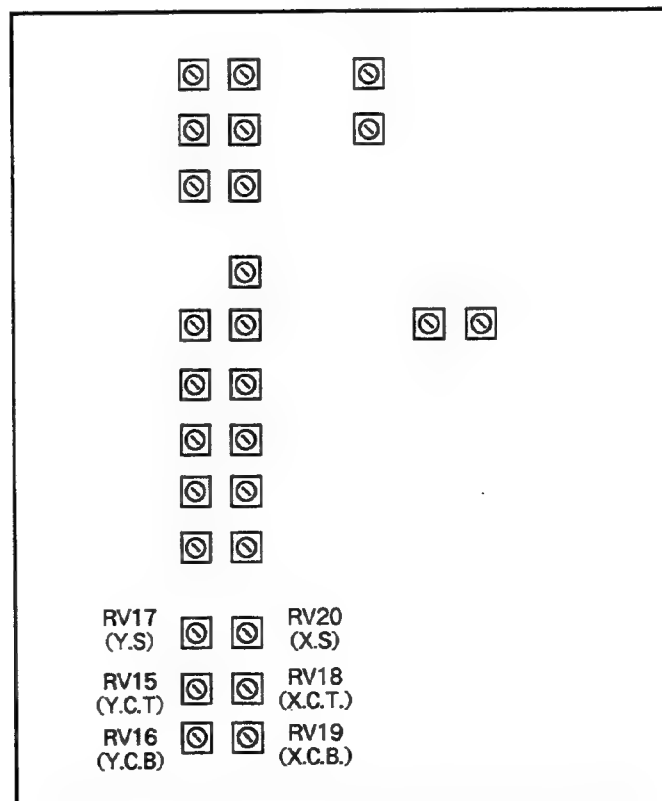
Focus adjustment

1. Input a dot or cross-hatch signals.
2. Adjust the FOCUS control for best focus in the central portion of the screen.

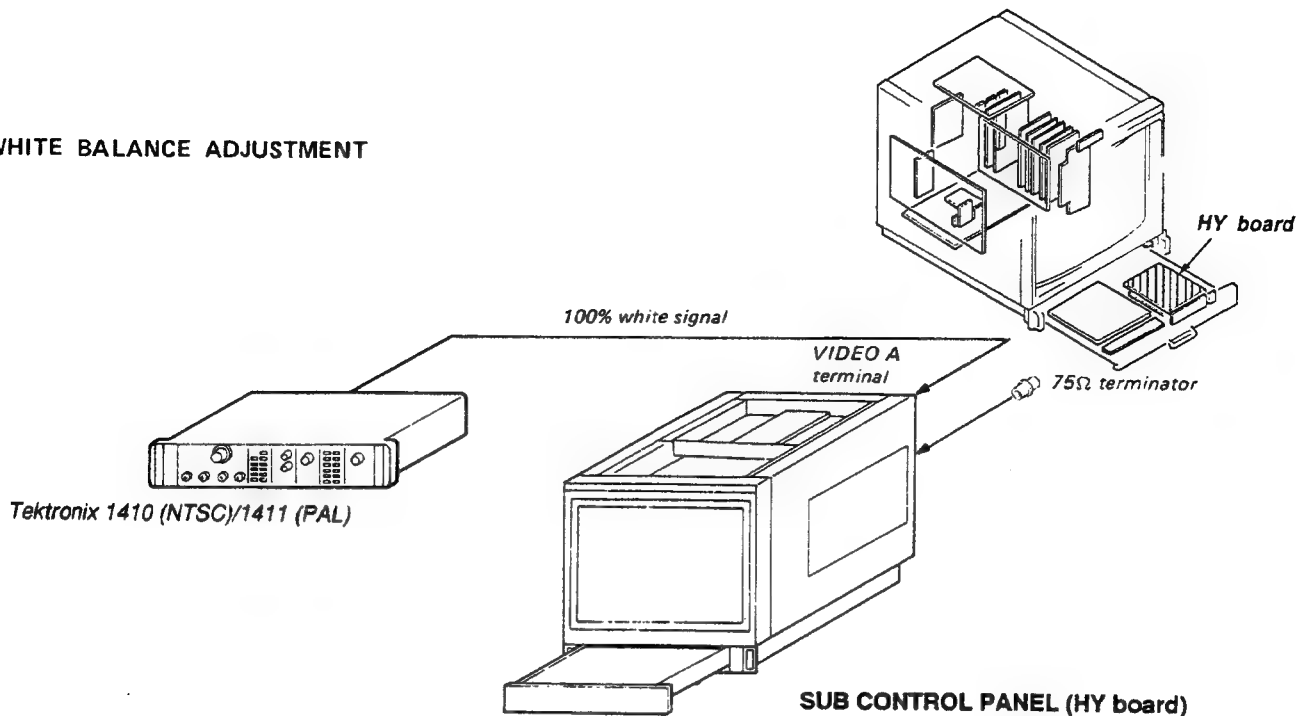
FRONT PANEL



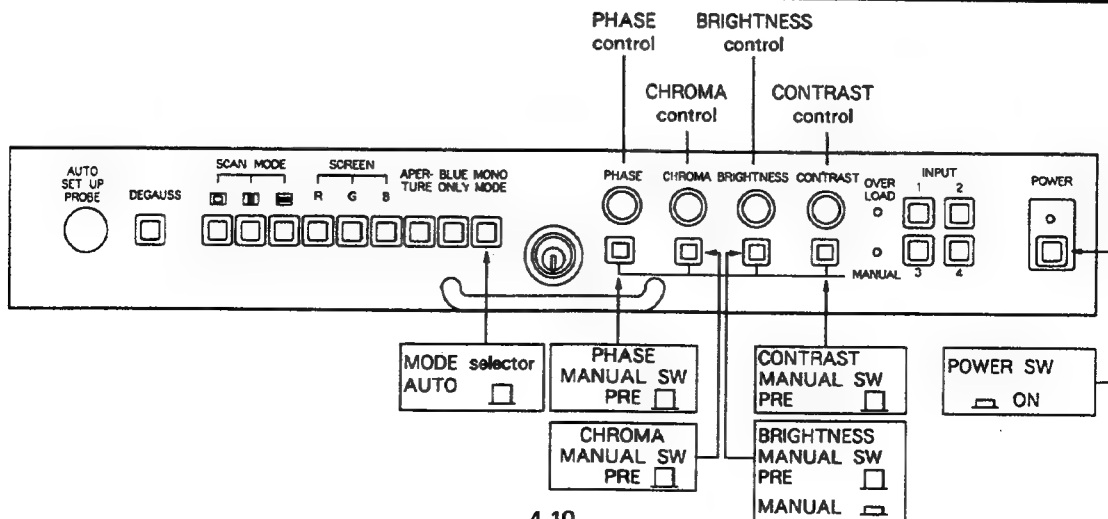
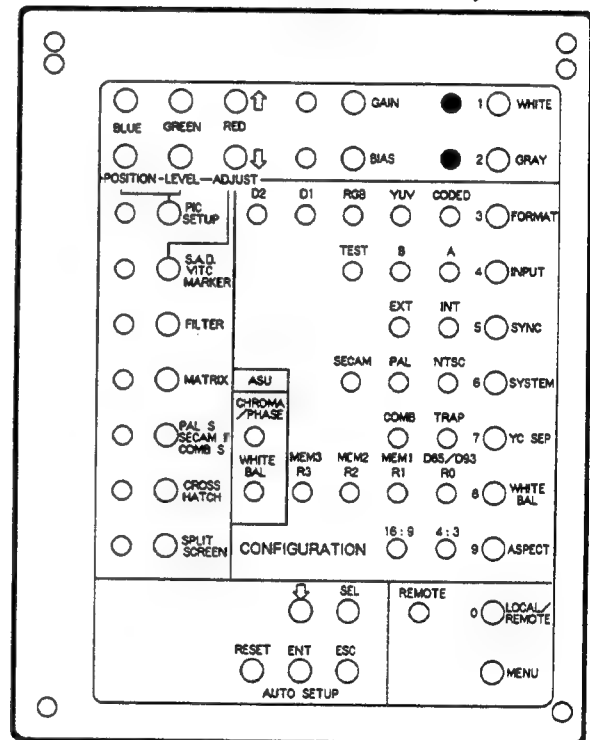
DA board



WHITE BALANCE ADJUSTMENT



1. Input 100% white signal to VIDEO A connector.
2. Gray button ON
3. BRIGHTNESS MANUAL switch MANUAL. (MANUAL)
4. Turn BRIGHT and CONTRAST to become 100 with PRESET MENU.
SAVE the DATA.
5. Switch off the MANUAL switches of CONTRAST and BRIGHT.
6. Turn BIAS controls (S21:Red, S23:Green, S32:Blue) on the HY board to adjust the BRIGHTNESS to 2.8cd/m² (nit) and white balance using COLOR ANALYZER and check 2.8cd/m² (nit) by LUMINANCE METER.
7. Gray button OFF
8. Turn GAIN controls (S20:Red, S22:Green, S31:Blue) on The HY board to adjust the BRIGHTNESS at HIGH LIGHT to 103cd/m² (nit) and white balance using COLOR ANALYZER and check 103cd/m² (nit) by LUMINANCE METER.
9. Repeat procedure steps 6 to 8 if necessary.
10. Save the date with SAVE WHITE BALANCE MENU.



4-6. SAFETY RELATED ADJUSTMENTS

+B PROTECTOR (R52, R53)

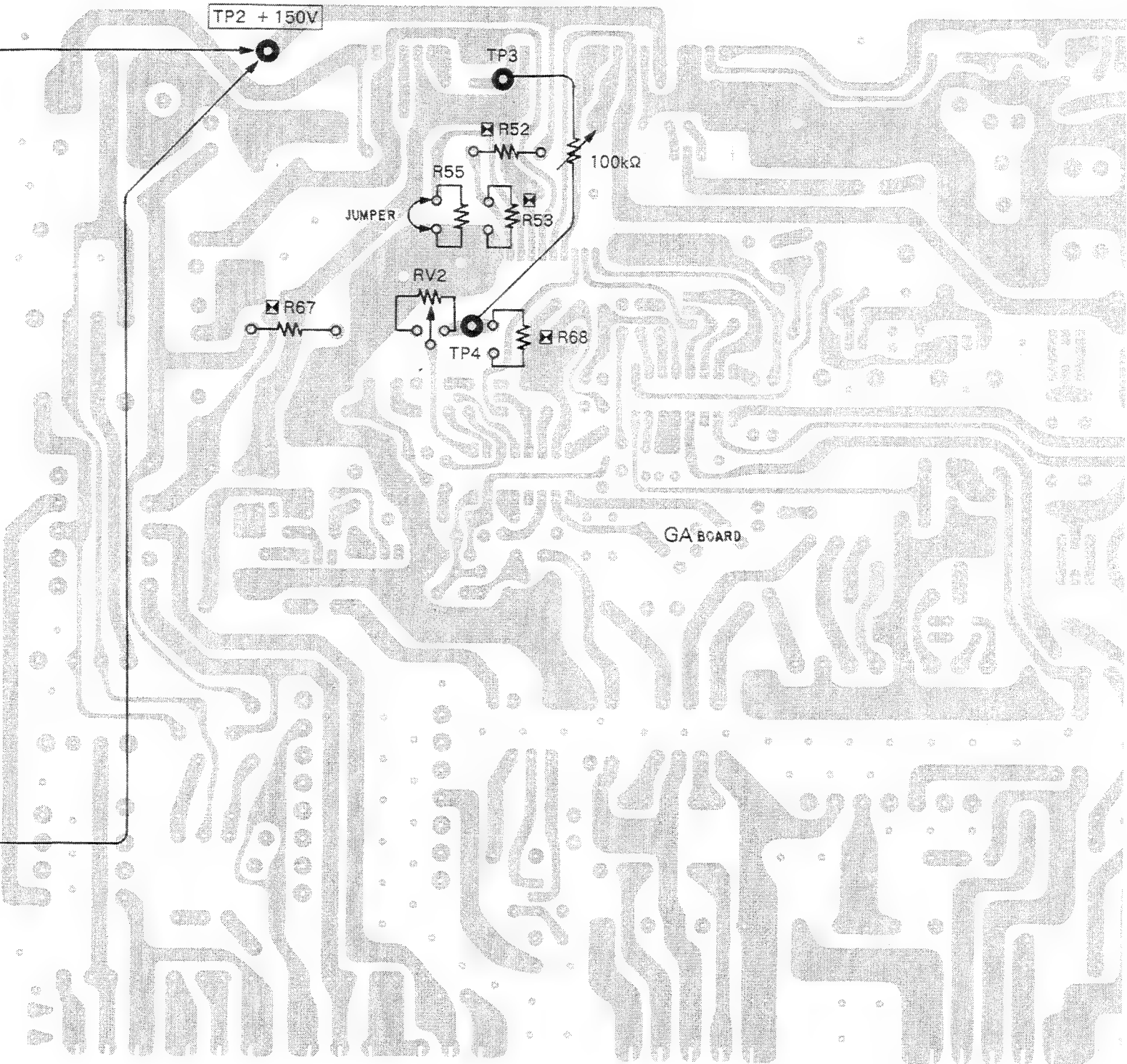
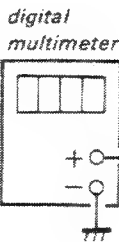
When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

- ☒ GA BoardQ13, Q14, R52, R53
- ☒ GB BoardQ3, Q4, Q5, D5, D6, D7, D8, R4, R5, R19, R20, R21, R22

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 and TP3 (GND) on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is out ☐)
2. Short-circuit R55 on GA board.
3. Connect a 100 k Ω variable resistor between TP4 and TP3 (GND) on GA board.
4. Turn down the 100 k Ω variable resistor gradually from maximum to minimum and confirm that voltage at TP2 drops abruptly to 0V when the digital multimeter reading reaches $199.0 \pm 17.0V$.
5. If step 4 isn't satisfied, select resistance values of R52 and R53 which satisfy the specifications.
6. Restore these to their original states and confirm that the voltage at TP2 is $150.0 \pm 1.0V$.



+B MAX CONFIRMATION (R67, R68)

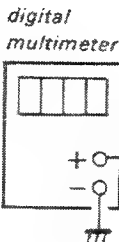
When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

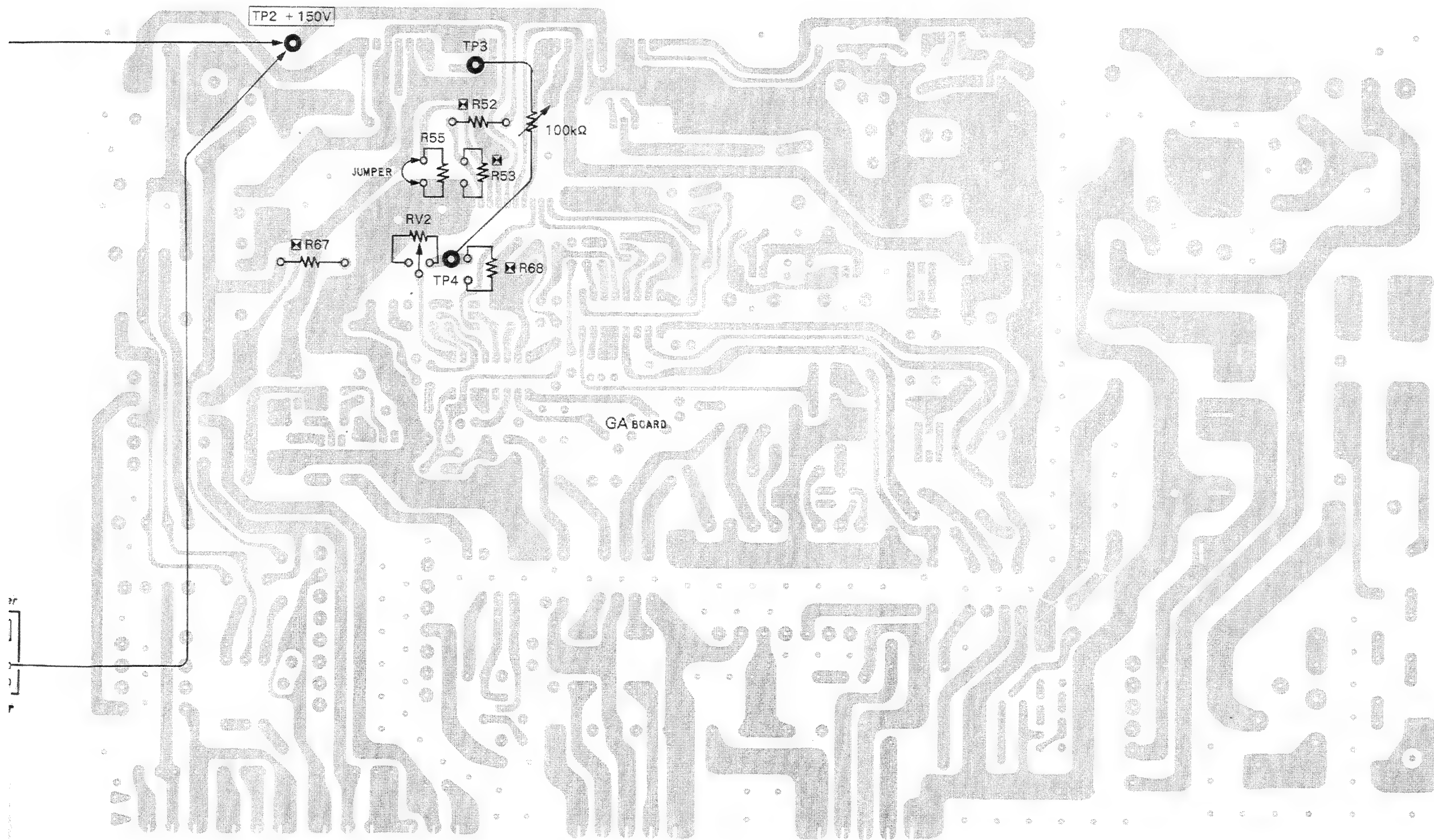
- ☒ GA Board IC3, C59, R67, R68, R78, RV2

It is necessary to use a digital multimeter for this confirmation.

Connect a digital multimeter to TP2 and TP3 (GND) on GA Board.

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (manual button is out ☐)
2. Confirm that the reading on the digital multimeter is $+165.0V \pm 13.0V$ when RV2 variable resistor is turned to fully clockwise.
3. If the specifications are not met, select resistance values for R67 and R68 which satisfy the specifications.
4. After confirmation, make the reading on the digital multimeter into $150.0V \pm 1.0V$ by adjusting RV2 on GA Board.





HIGH VOLTAGE HOLD DOWN ADJUSTMENT AND CONFIRMATION

(☒ R106, R108)

When replacing the following components (marked ☒ on the schematic diagram), make this adjustment.

- ☒ HVR
- ☒ EB BoardIC4, D24, D25, D27, R89, R90, R102, R103, R104, R105, R106, R107, R108, R111, R152

It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

Connect the DC current meter (3 mA range, accuracy of 1.0 class or more)

Even through an electrostatic voltmeter may not be used, connect digital multimeters to TP2 on EB Board, TP6 and TP5 (GND) on EA Board.

Note: Use an electrostatic voltmeter which is calibrated, and which has $2 \times 10^9 \Omega$ or more input impedance.

example: ESH- 27X or ESH- 23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.

• In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is OUT ☐)
2. Connect 200 k Ω variable resistor with R75 in parallel on EA Board.
3. Connect an electrostatic voltmeter to the CRT anode.
4. Turn down the variable resistor gradually from maximum to minimum until the anode voltage becomes 29.0 ± 0.1 kV.
5. Select the R106 or R108 resistance so that the anode voltage drops abruptly at 29.0 ± 0.1 kV.
6. Solder the selected resistor to R106 or R108.
7. Turn power on, turn down the variable resistor attached to R75 gradually from maximum to minimum and confirm that the anode voltage drops abruptly at 29.0 ± 0.5 kV.
8. Remove the variable resistor and confirm that the anode voltage is 27.0 ± 0.1 kV.
9. Detach the electrostatic voltmeter from the anode.

• In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is OUT ☐)
2. Connect the digital multimeter between TP2 on the EB board and GND.
3. Select the R106 or R108 resistance so that the digital multimeter reading becomes 16.89 ± 0.1 V.
4. Connect the 200 k Ω variable resistor in parallel to R75 on the EA board.
5. Connect the digital multimeter between TP6 on the EA board and GND.
6. Turn down the variable resistor gradually from maximum to minimum and confirm that the picture disappears when voltage at TP2 goes beyond 16.89 ± 0.1 V.

HIGH VOLTAGE REGULATOR CONFIRMATION

(☒ R73, R75)

When replacing the following components (marked ☒ on the schematic diagram), make this adjustment.

- ☒ HVR
- ☒ EA BoardIC2, IC3, R61, R62, R71, R72, R73, R74, R75, R88, RV1

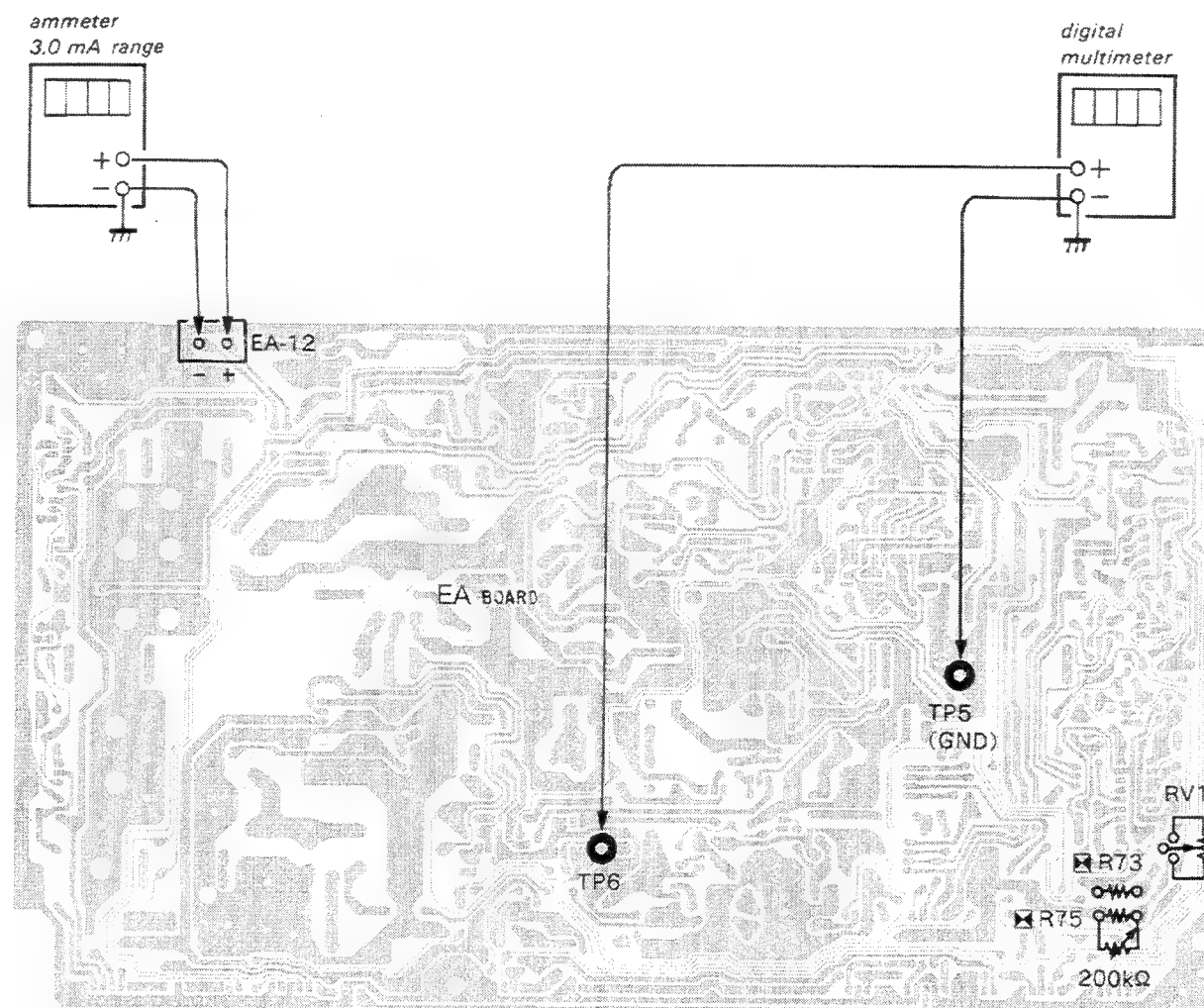
It is necessary to use an electrostatic voltmeter or equivalent for this adjustment. Connect the electrostatic voltmeter to the anode cap.

Even though an electrostatic voltmeter may not be used, connect digital multimeter to TP6 on EA Board.

Note: Use an electrostatic voltmeter which is calibrated, and which has $2 \times 10^9 \Omega$ or more input impedance.

example: ESH- 27X or ESH- 23X of the SINGER COMPANY

Use a digital multimeter which has 4 digit or more.



• In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out ☐)
2. Turn RV1 on EA Board for a maximum reading on the electrostatic voltmeter. (Fully clockwise)
3. Select the R73 and R75 resistance so that the electrostatic voltmeter reading becomes 27.35 ± 0.15 kV.
4. If step 3 is not satisfied, select the value of R73 and R75 and repeat above steps 2 through 3.
5. After confirmation adjust RV1 for 27.0 ± 0.1 kV on the electrostatic voltmeter.

• In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out ☐)
2. Turn RV1 for a maximum reading on the digital multimeter at TP6 on EA Board. (Fully clockwise)
3. Select the R73 and R75 resistance so that voltage at TP6 becomes 15.70 ± 0.1 V.

BEAM CURRENT PROTECTOR 1 CONFIRMATION

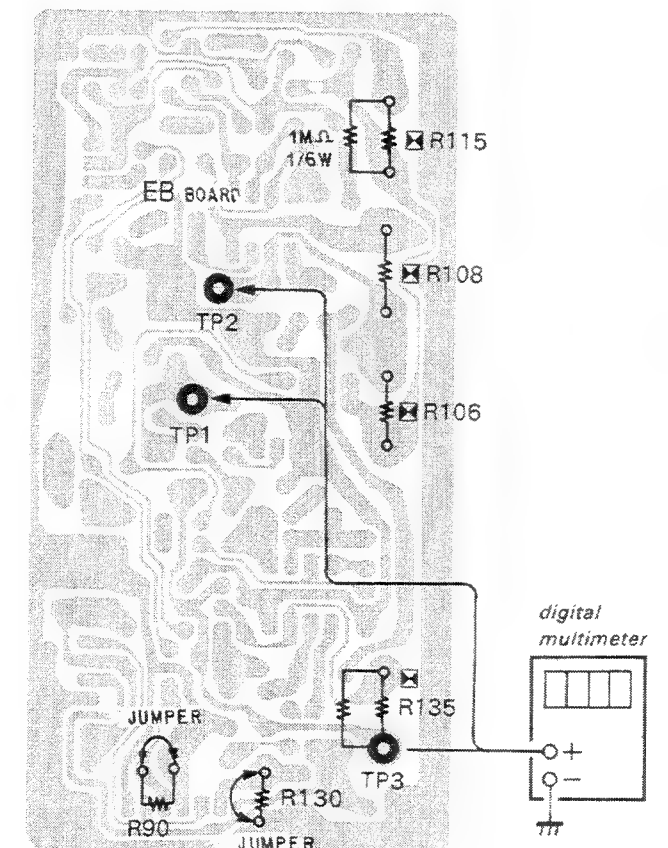
(☒ R115)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

- ☒ EB BoardIC4, D24, D26, D27, R89, R90, R102, R103, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R153
- P BoardFBT
- EB BoardIC4

It is necessary to use a regulated digital multimeter for this confirmation. Connect the digital multimeters to TP1 on EB Board

Connect the current meter to EA-12. (3 mA Range, accuracy of 1.0 class or more)

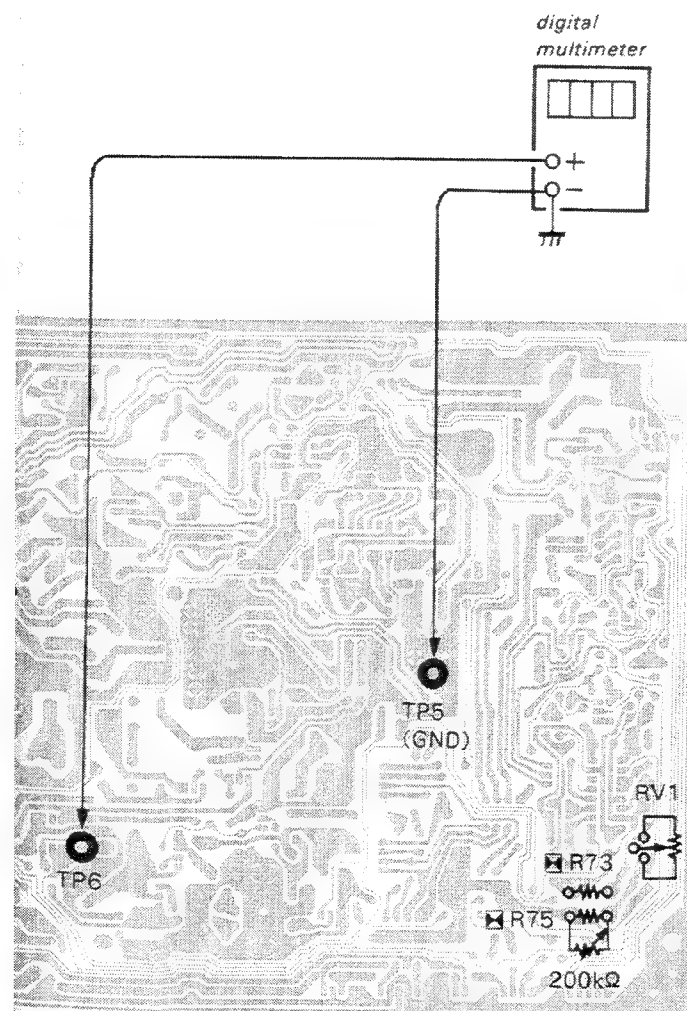


• In case of using electrostatic voltmeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out.)
2. Turn RV1 on EA Board for a maximum reading on the electrostatic voltmeter. (Fully clockwise)
3. Select the R73 and R75 resistance so that the electrostatic voltmeter reading becomes 27.35 ± 0.15 kV.
4. If step 3 is not satisfied, select the value of R73 and R75 and repeat above steps 2 through 3.
5. After confirmation adjust RV1 for 27.0 ± 0.1 kV on the electrostatic voltmeter.

• In case of using a digital multimeter

1. Receive a color bar signal and set CONTRAST and BRIGHTNESS controls to preset position. (Manual button is out.)
2. Turn RV1 for a maximum reading on the digital multimeter at TP6 on EA Board. (Fully clockwise)
3. Select the R73 and R75 resistance so that voltage at TP6 becomes 15.70 ± 0.1 V.



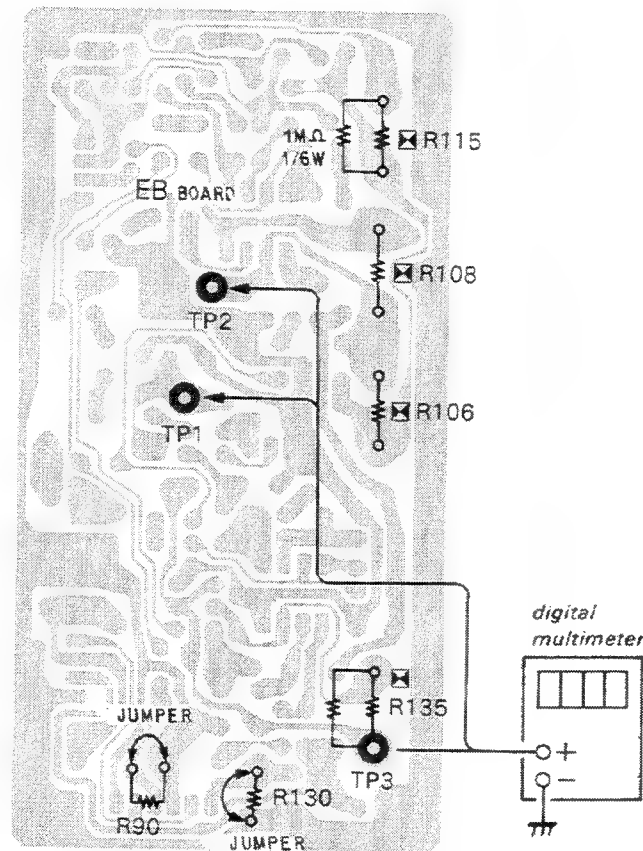
BEAM CURRENT PROTECTOR 1 CONFIRMATION

(R115)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

☒ EB Board IC4, D24, D26, D27, R89, R90, R102, R103, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R153
P Board FBT
EB Board IC4

It is necessary to use a regulated digital multimeter for this confirmation. Connect the digital multimeters to TP1 on EB Board. Connect the current meter to EA-12. (3 mA Range, accuracy of 1.0 class or more)



1. Receive a color bar signal.
2. Remove the EA-12 connector and connect the DC ammeter.
3. Connect the digital multimeter between TP1 on the EB board and GND.
4. Short-circuit C1 on the BI board.
5. Short-circuit R130 on the EB board.
6. Turn power on, read voltage at TP1, then proceed as follows:
 - If 32.5V or over, solder the 1 MΩ (1/6W) metal-film resistor to R115 on the EB board.
 - If less than 32.5V, open R115.
7. Turn the BRIGHTNESS and CONTRAST controls (MANUAL button is IN.) and confirm that the picture disappears when the DC ammeter reads 2.0 ± 0.4 mA.
8. If the condition in step 7 is not satisfied, select the R115 resistance accordingly.
9. Return the EA-12 connector, C1 on the BI board and R130 on the EB Board to their initial condition.
10. Set the BRIGHTNESS and CONTRAST controls to maximum and confirm that the OVERLOAD lamp lights.

BEAM CURRENT PROTECTOR 2 CONFIRMATION

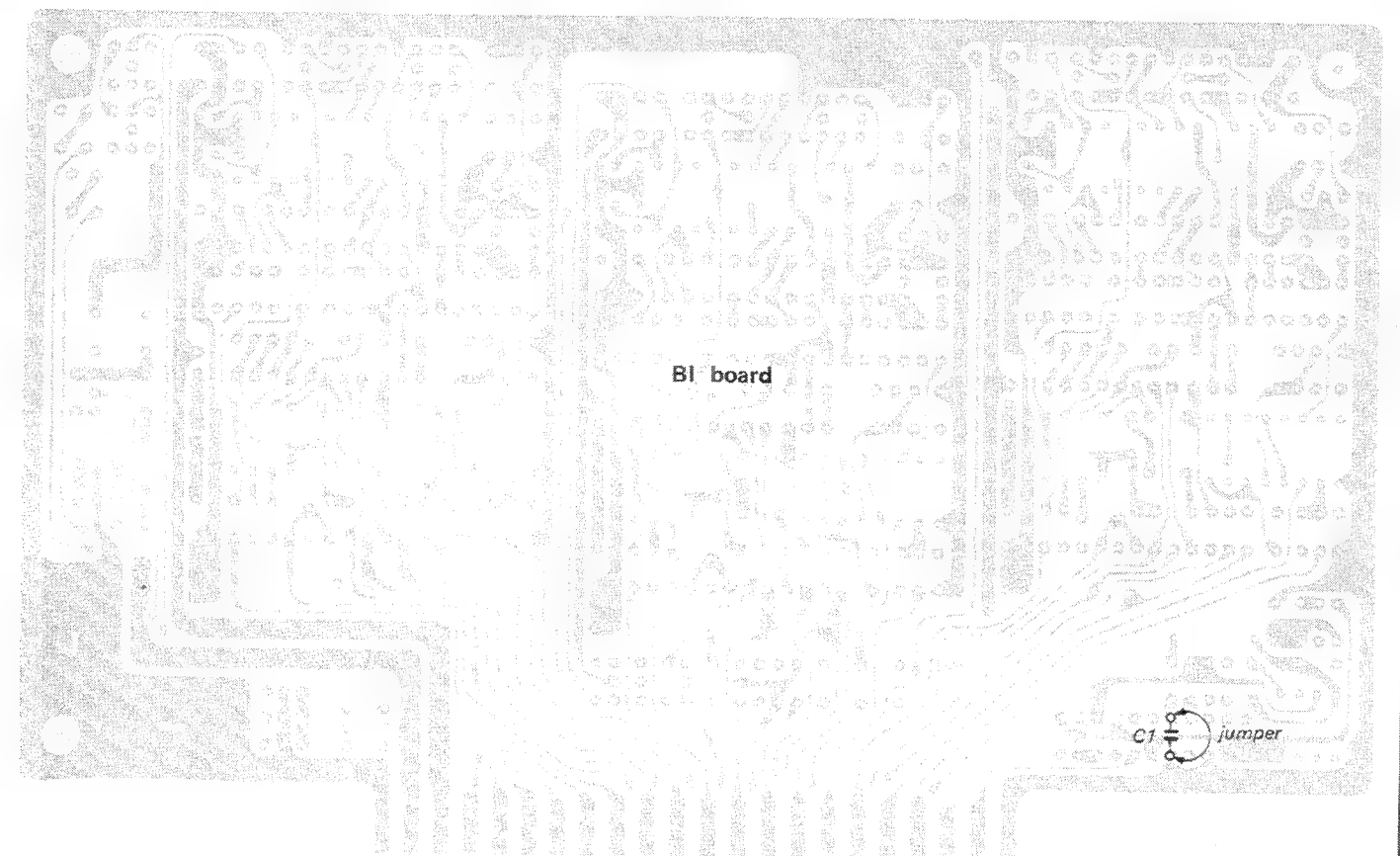
(R135)

When replacing the following components (marked ☒ on the schematic diagram), make this confirmation.

☒ EB Board IC6, D29, D51, R122, R123, R124, R130, R131, R132, R133, R134, R135, R136, R137, R138, R140, R141
P Board FBT

It is necessary to use a regulated digital multimeter for this confirmation. Connect the digital multimeters to TP3 on EB Board. Connect the current meter to EA-12 (3 mA Range accuracy of 1.0 class or more)

1. Receive a color bar signal.
2. Remove the EA-12 connector and connect the DC ammeter.
3. Connect the digital multimeter between TP3 on the EB board and GND.
4. Short-circuit C1 on the BI board.
5. Short-circuit R90 on the EB board.
6. Turn power on, read voltage at TP3, then proceed as follows:
 - If 32.5V or over, solder the 1 MΩ (1/6W) metal-film resistor to R135 on the EB board.
 - If less than 32.5V, open R135.
7. Turn the BRIGHTNESS and CONTRAST controls (MANUAL button is IN.) and confirm that the picture disappears when the DC ammeter reads 2.0 ± 0.4 mA.
8. If the condition in step 7 is not satisfied, select R135 resistance accordingly.
9. Return the EA-12 connector, C1 on the BI board and R90 on the EB board to their initial condition.
10. Set the BRIGHTNESS and CONTRAST controls to maximum and confirm that the OVERLOAD lamp lights.



4-7. CIRCUIT ADJUSTMENTS

- To make the following adjustments, unless otherwise specified, the controls knobs and switches shall be preset as described below.

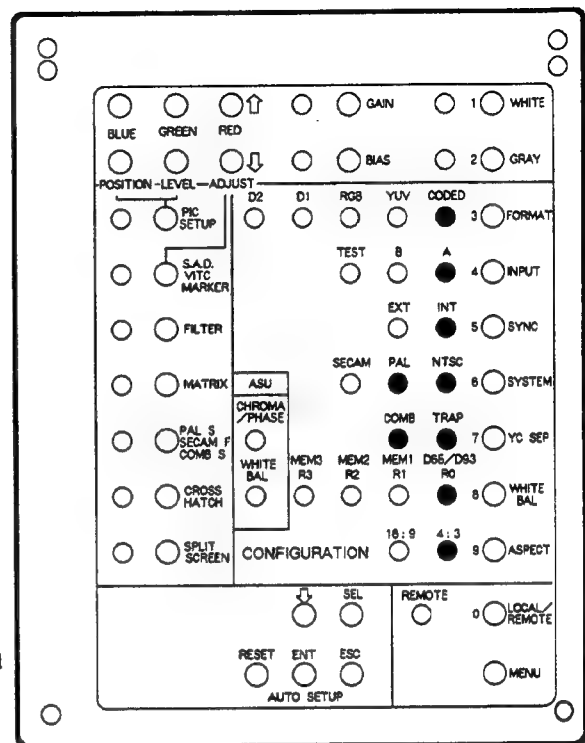
FRONT PANEL

- INPUT selector 1 HX board
- CONTRAST MANUAL switch PRESET HW board
- BRIGHTNESS MANUAL switch PRESET
- CHROMA MANUAL switch PRESET
- PHASE MANUAL switch PRESET
- SCAN MODE switch
- ☐ UNDER SCAN NOR HA board
- ☐ H. DELAY NOR
- ☐ V. DELAY NOR
- SCREEN switch (R) NOR
- SCREEN switch (G) NOR
- SCREEN switch (B) NOR
- APT switch NOR
- BLUE ONLY Y switch NOR
- MODE selector AUTO

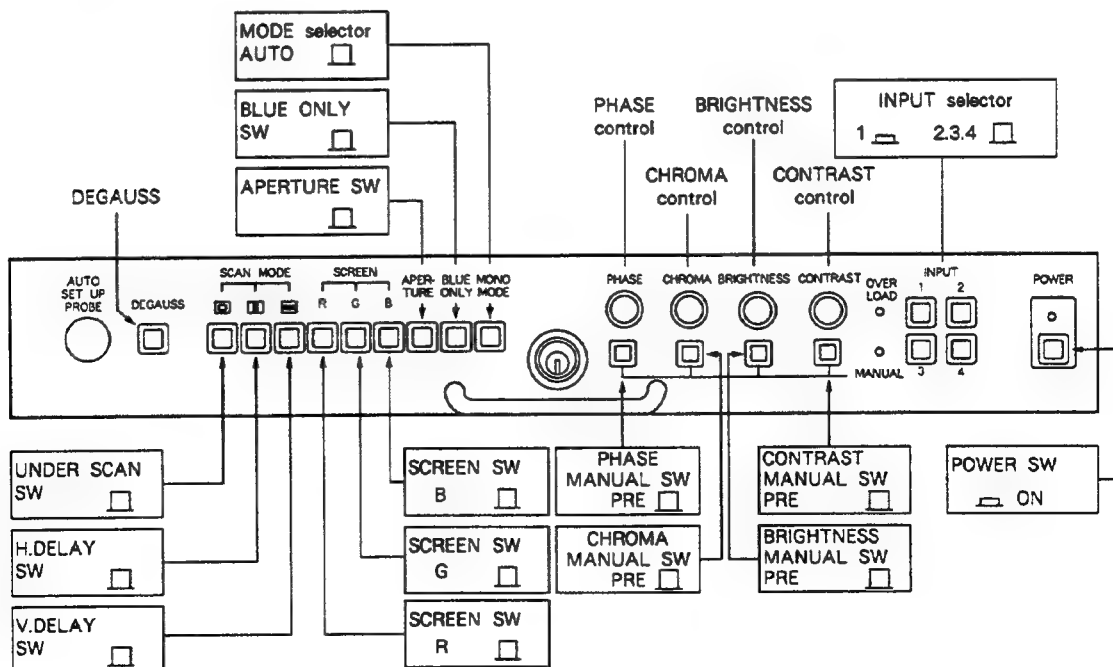
SUB CONTROL PANEL

- FORMAT button CODED
- INPUT button A
- SYNC button INT
- COLOR SYSTEM button NTSC (BVM-1916)
- YC SEP button PAL (BVM-2016P)
- COMB (BVM-1916)
- TRAP (BVM-2016P)
- WHITE BALANCE button D65/D93
- ASPECT button 4:3
- PIC SETUP button OFF
- SAD/VITC/MARKER button OFF
- FILTER button OFF
- MATRIX button OFF
- PAL S/SECAM F/COMB S button OFF
- CROSS HATCH button OFF
- SPLIT SCREEN button OFF
- WHITE button OFF
- GRAY button OFF
- AFC switch 2m sec

SUB CONTROL PANEL (HY board)



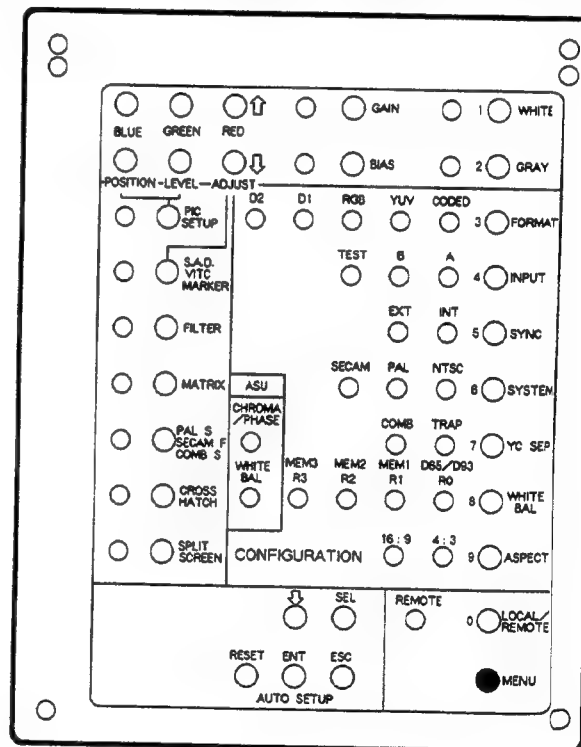
FRONT PANEL



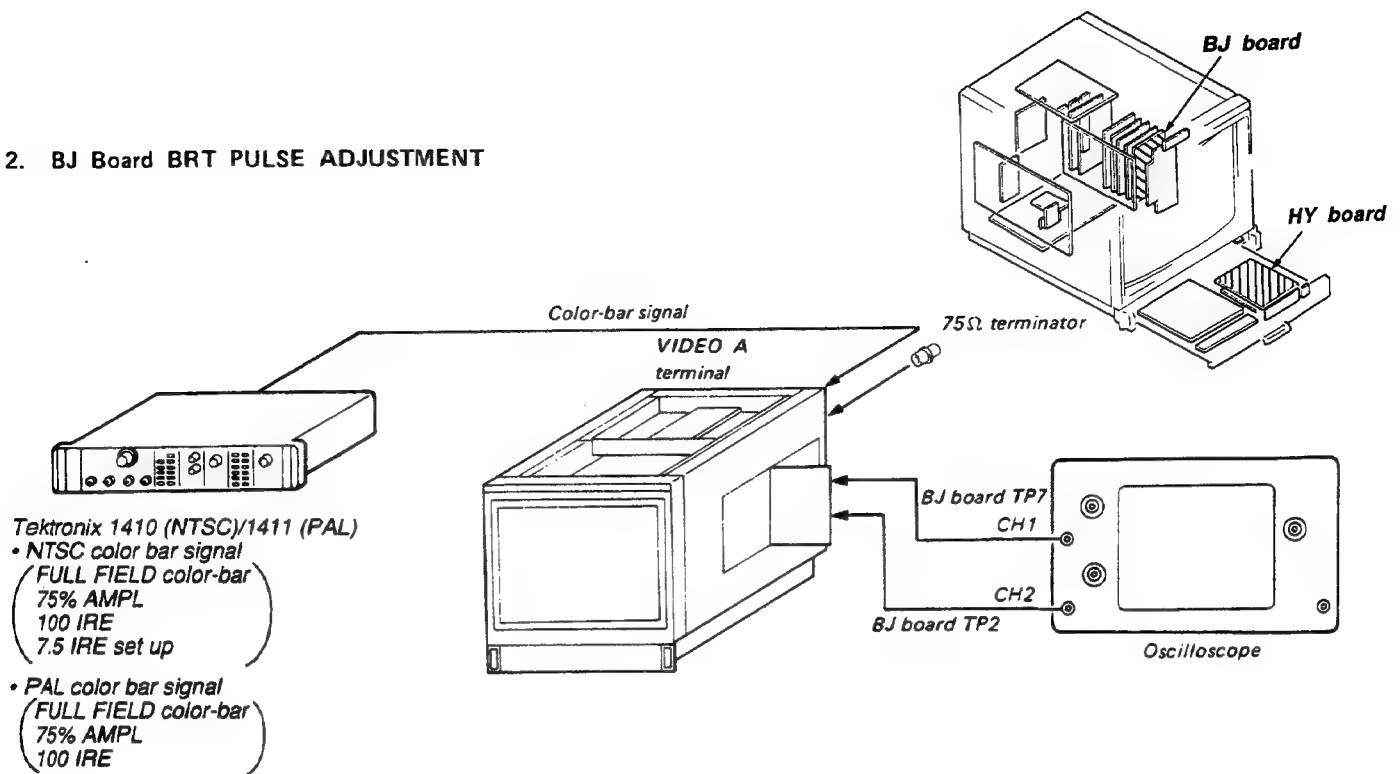
4. ADJUSTMENTS



- Abstract**



2. BJ Board BRT PULSE ADJUSTMENT



1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope (CH1 probe) to the TP7 of BJ board and oscilloscope (CH2 probe) to the TP2 of BJ board.
3. Adjust RV7 to obtain the waveform on the oscilloscope as shown in Fig. 2-1.

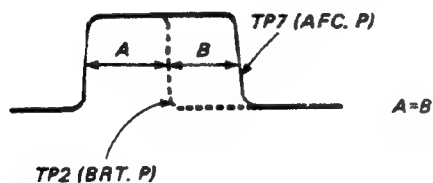
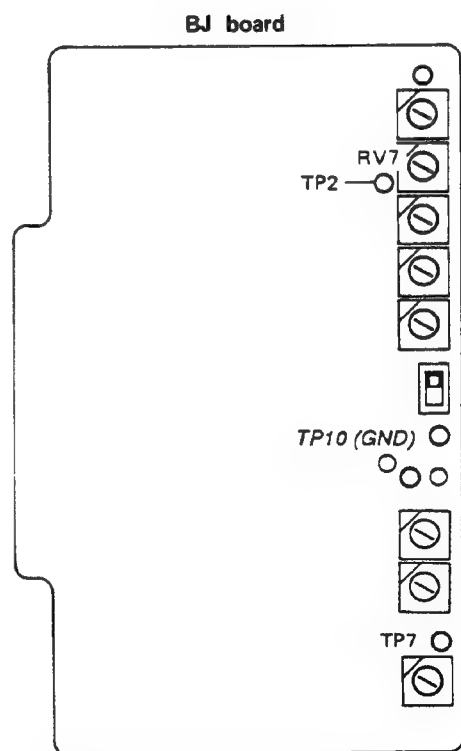
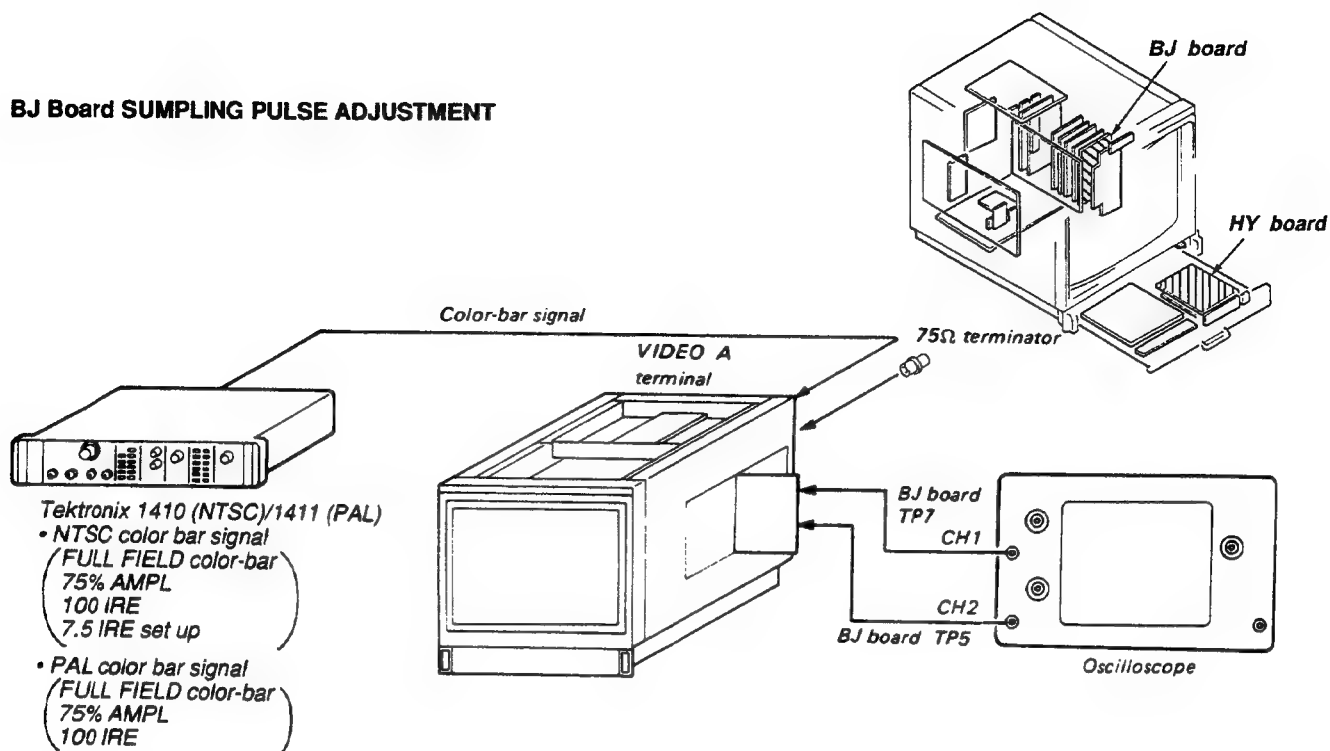


Fig. 2-1



BJ Board SUMPLING PULSE ADJUSTMENT



1. Input a color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope (CH 1 probe) to the TP7 of BJ board and Connect an oscilloscope (CH 2 probe) to the TP5 of BJ board.
3. Adjust RV5 to obtain the waveform on the oscilloscope as shown in Fig. 2-2.

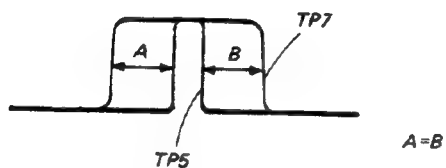
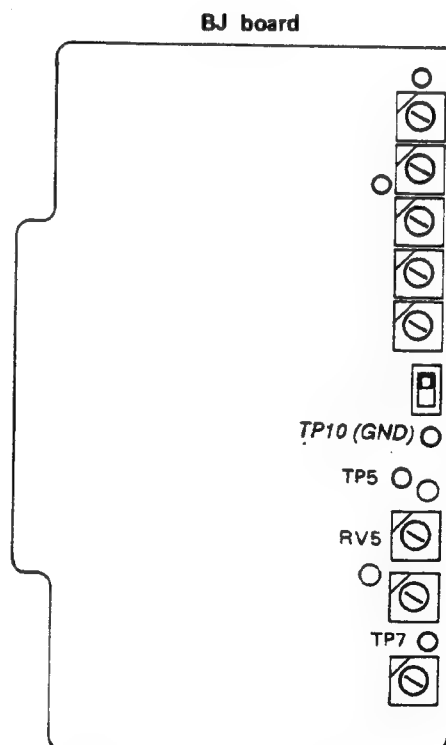
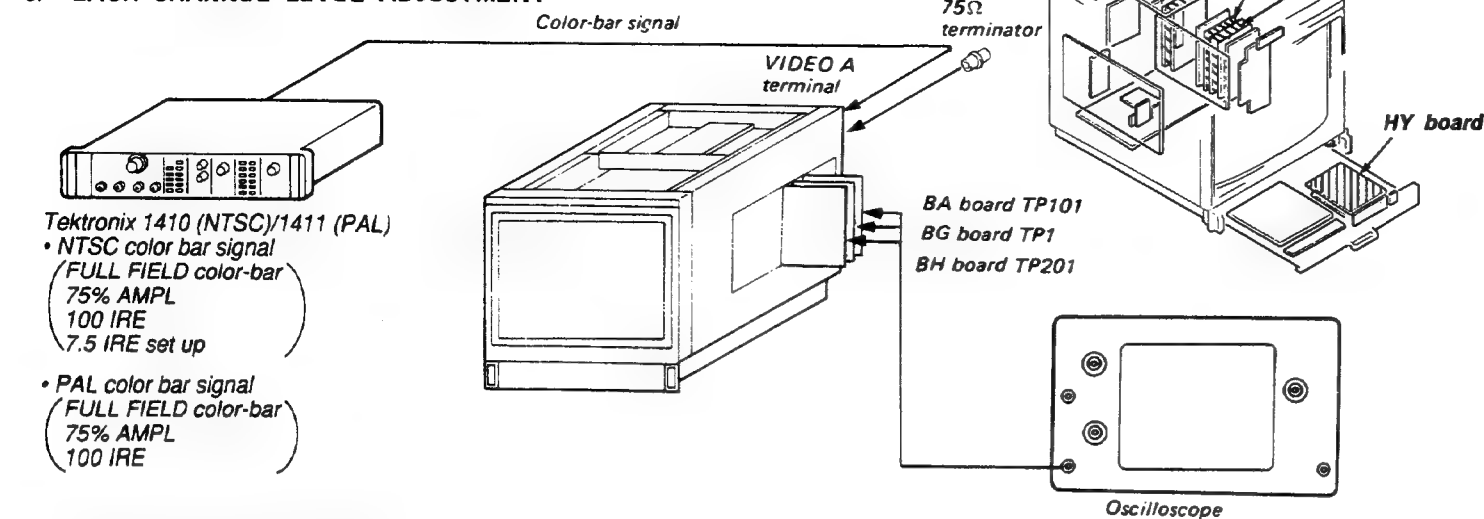


Fig. 2-2



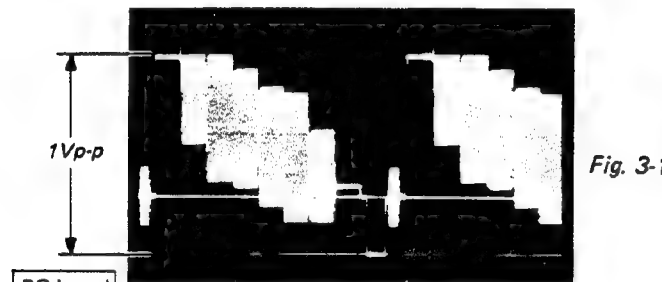
3. EACH CHANNEL LEVEL ADJUSTMENT



- FILTER button (SUB CONTROL PANEL) OFF
- MODE selector (FRONT PANEL) MONO ()
- INPUT selector (FRONT PANEL) 1 ()

BA board

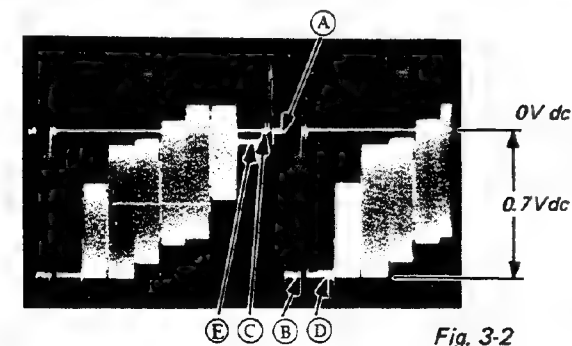
1. Input a color-bar signal to VIDEO A terminal to the set.
2. Connect an oscilloscope to the TP101 of BA board.
3. Adjust to 1.0Vp-p with RV101 of BA board as shown in Fig. 3-1.



BG board

4. Connect an oscilloscope to the TP1 of BG board.
5. Adjust to 1.0Vp-p with RV3 of BG board as shown in Fig. 3-1.
6. Connect an oscilloscope to the TP201 of BH board.

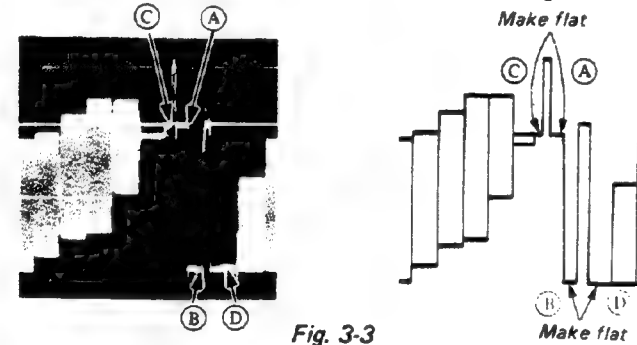
7. Adjust FRONT BRT VR so that (A) (black level) is 0V DC as shown in Fig. 3-2.
8. Adjust FRONT CONTR VR so that (B) (100% white level) is -0.7V DC as shown in Fig. 3-2.



- (A) Black level
- (B) 100% White level
- (C) 0 IRE level
- (D) 100 IRE level
- (E) 7.5 IRE level

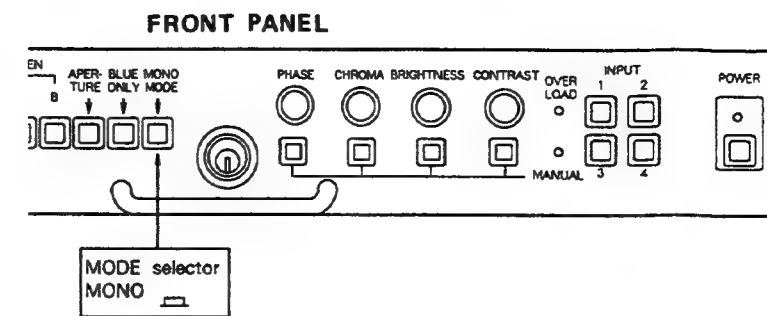
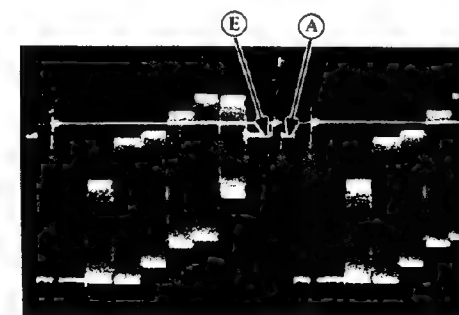
BH board

9. S2 (BH Board) 0 IRE
10. Adjust RV1 of BH board so that the (C) (0 IRE level) coincides with (A) (Black level) as shown in Fig. 3-3.
11. Adjust RV3 of BH board so that the (D) (100 IRE level) coincides with (B) (100% white level) as shown in Fig. 3-3.

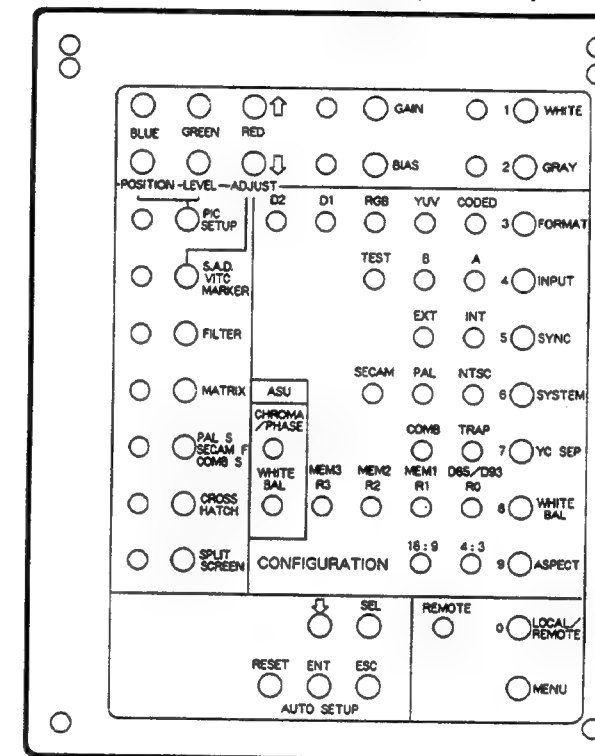


BH board

11. S2 (BH Board) 7.5 IRE
12. Adjust RV2 of BH board so that the (E) (7.5 IRE level) coincides with (A) (Black level) as shown in Fig. 3-4.
13. Set S2 (BH Board) to AUTO.

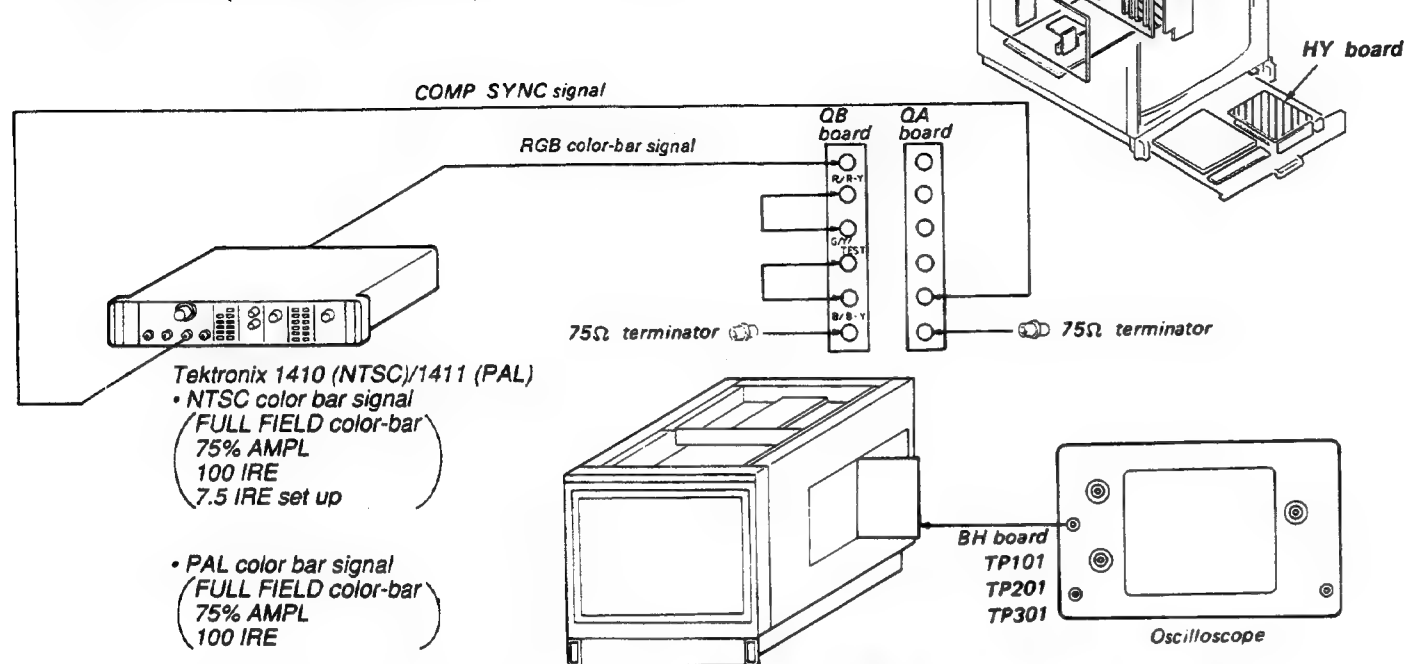


SUB CONTROL PANEL (HY board)

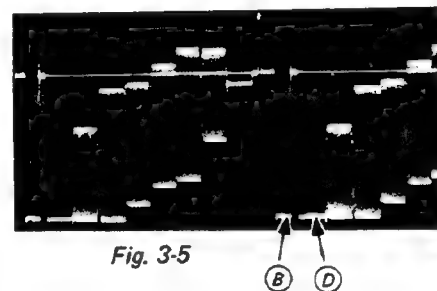


BA board

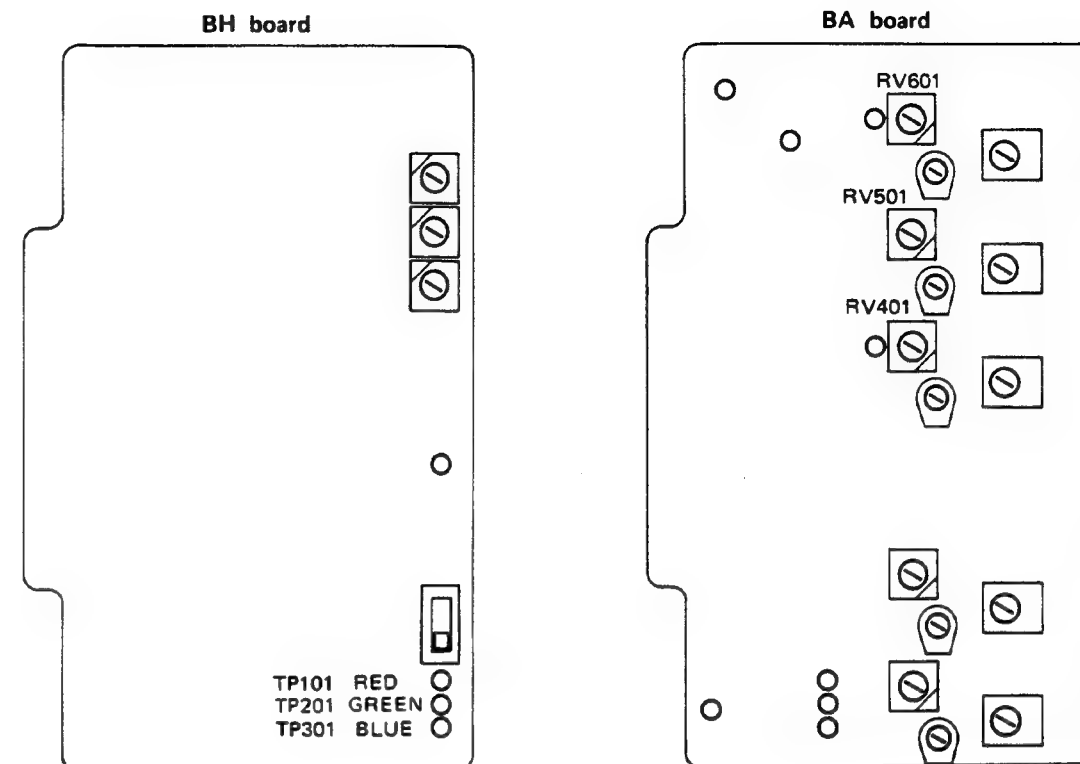
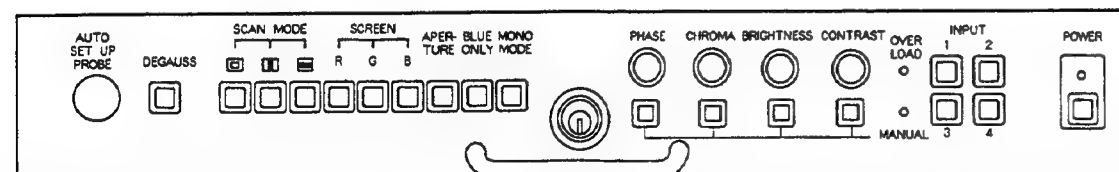
13. Input a color-bar signal to RGB input terminal of the set.
 - SYNC button (SUB CONTROL PANEL).....EXT
 - FORMAT button (SUB CONTROL PANEL).....RGB



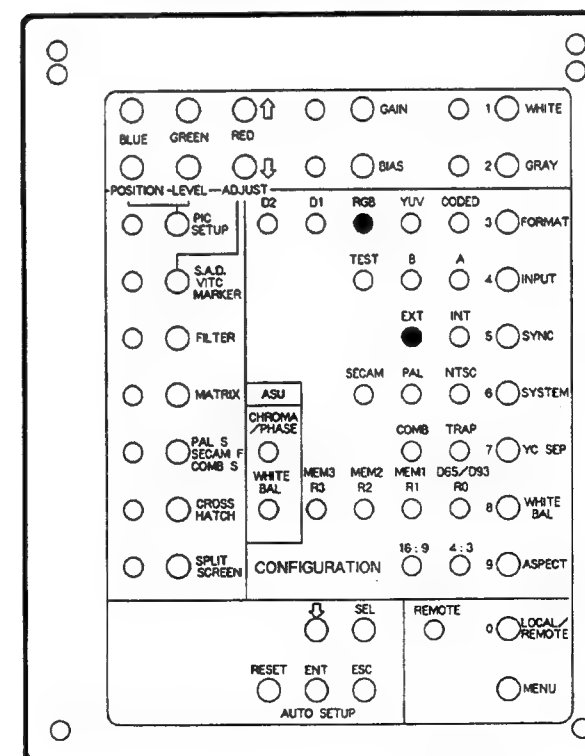
14. Connect an oscilloscope to TP101 of BH board.
15. Adjust RV401 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.
16. Connect an oscilloscope to TP201 of BH board.
17. Adjust RV501 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.
18. Connect an oscilloscope to TP101 of BH board.
19. Adjust RV601 of BA board so that the ① (100 IRE level) coincides with ② (100% white level) as shown in Fig. 3-5.



FRONT PANEL



SUB CONTROL PANEL (HY board)



4. BA Board INPUT CIRCUIT FREQUENCY CHARACTERISTIC ADJUSTMENT

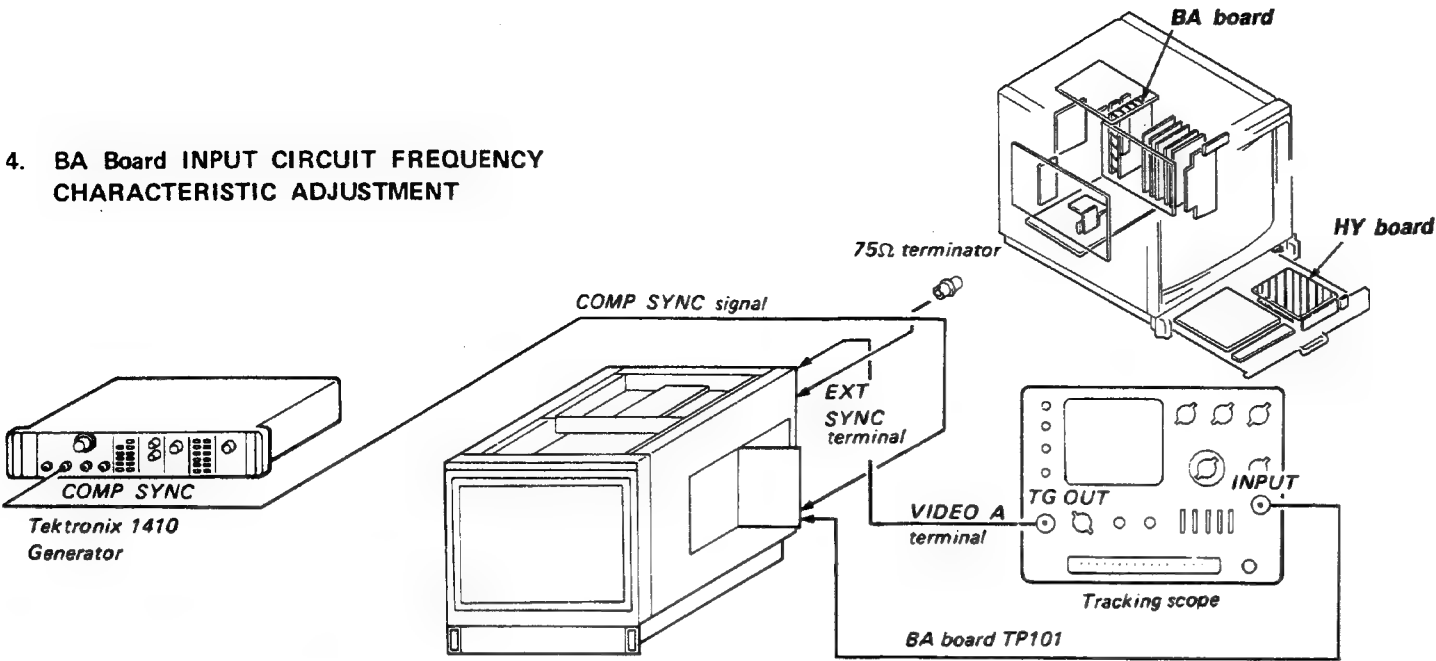
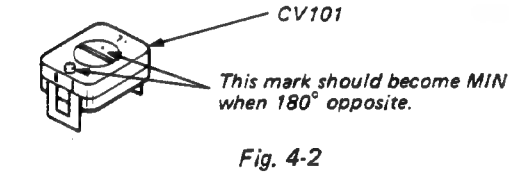
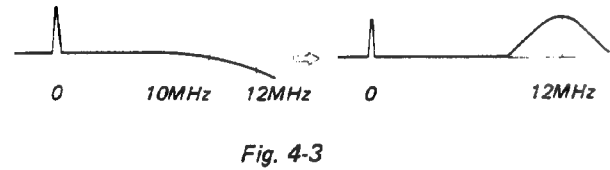


Fig. 4-1

- Complete the connection as shown in Fig 4-1.
 - FORMAT button (SUB CONTROL PANEL)..... CODED
 - INPUT selector (FRONT PANEL)..... 1
 - SYNC button (SUB CONTROL PANEL)..... EXT
 - CONTRAST control (FRONT PANEL)..... Minimum
 - BRIGHTNESS control (FRONT PANEL)..... Minimum
- Adjust CV101 so that minimum as shown in Fig. 4-2.



- Adjust output waveform peak to 12MHz with CV102 of the BA board as shown in Fig. 4-3.



- Adjust CV101 of the BA board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 4-4.

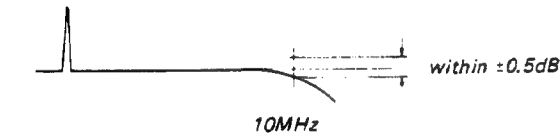
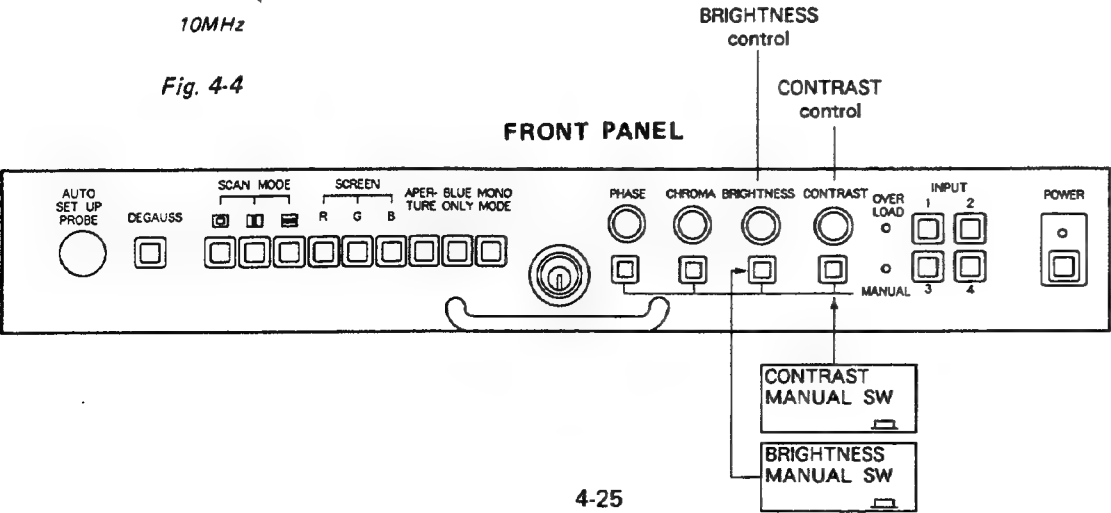


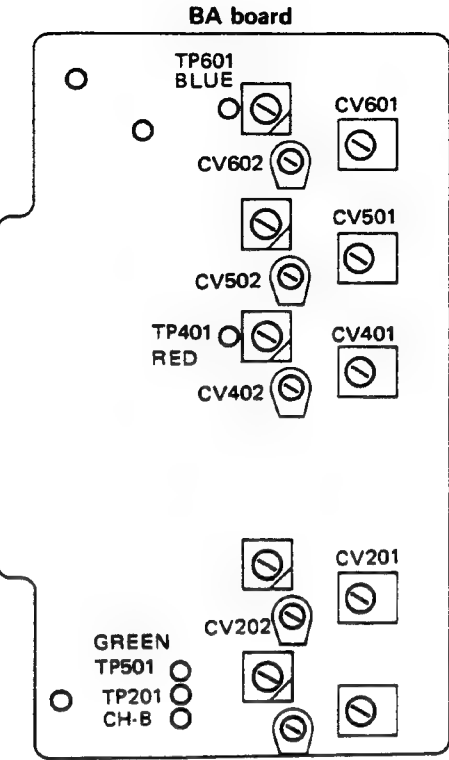
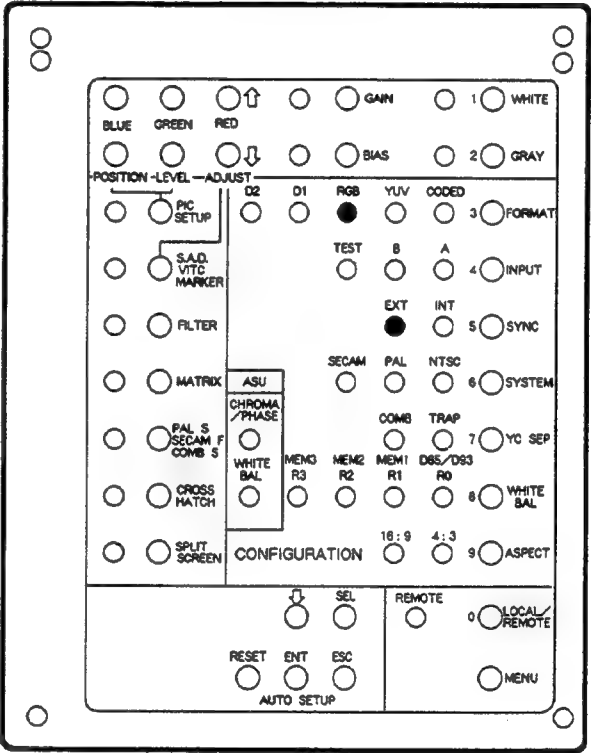
Fig. 4-4



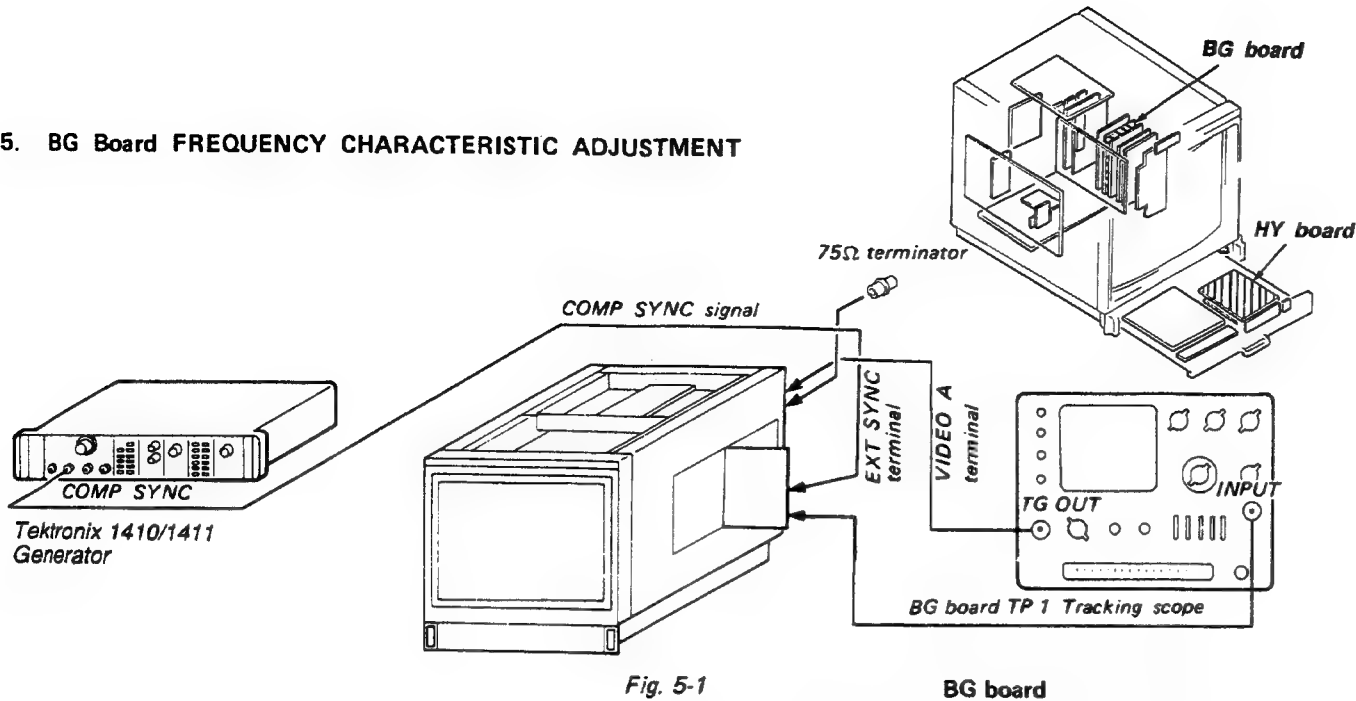
- In the same way, perform the adjustment, under the following conditions.

INPUT	INPUT button	FORMAT button	TP (BA board)	CV (BA board)
	(SUB CONTROL PANEL)			
B	B	CODED	TP201	CV201, 202
R/R-Y		RGB	TP401	CV401, 402
G/Y/TEST		RGB	TP501	CV501, 502
B/B-Y		RGB	TP601	CV601, 602

SUB CONTROL PANEL (HY board)



5. BG Board FREQUENCY CHARACTERISTIC ADJUSTMENT



- Complete the connection as shown in Fig 5-1.
 - SYNC button (SUB CONTROL PANEL)..... EXT
 - CONTRAST control Minimum
 - BRIGHTNESS control Minimum
 - S1 (BG Board) 4.5MHz (4.5 6.5)
- Adjust RV1, CV2 and CV3 of the BG board so that the output waveform becomes flat in a range of 0 to 10MHz as shown in Fig. 5-2. (within 0±0.5dB)

*Waveform movement by RV1, CV2, CV3

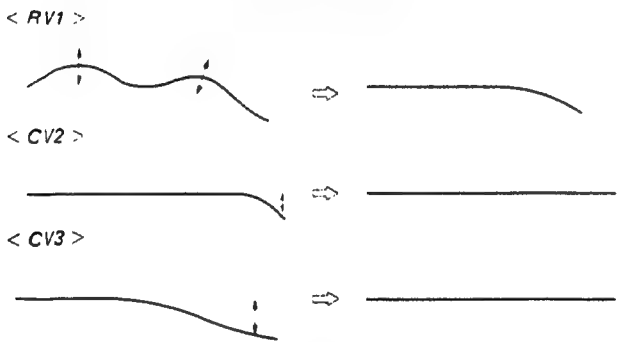


Fig. 5-2

- Adjust with RV2 (BG board) to the position in which the APT (Fig. 5-3.) begins to become effective.

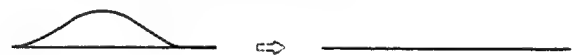
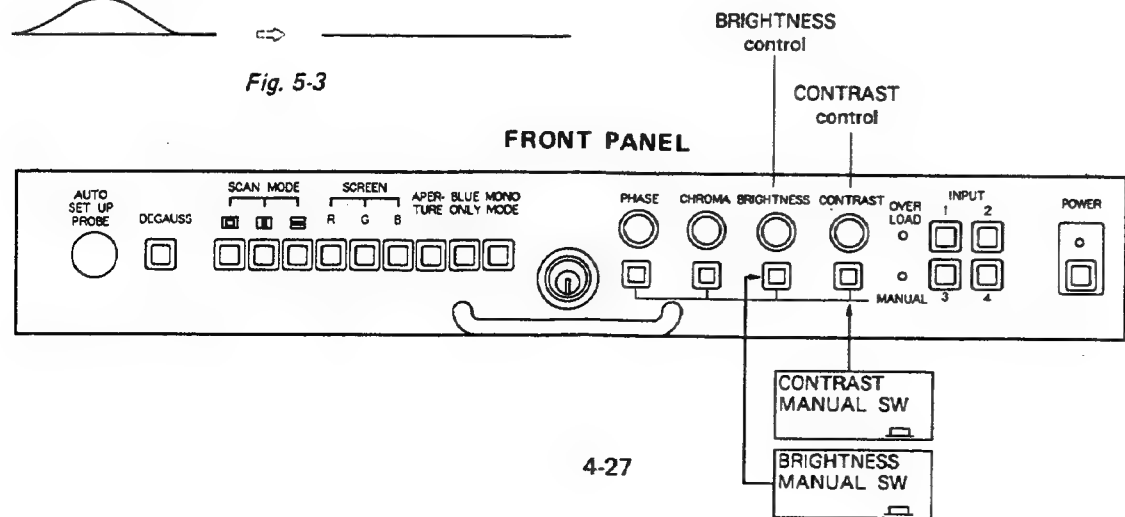
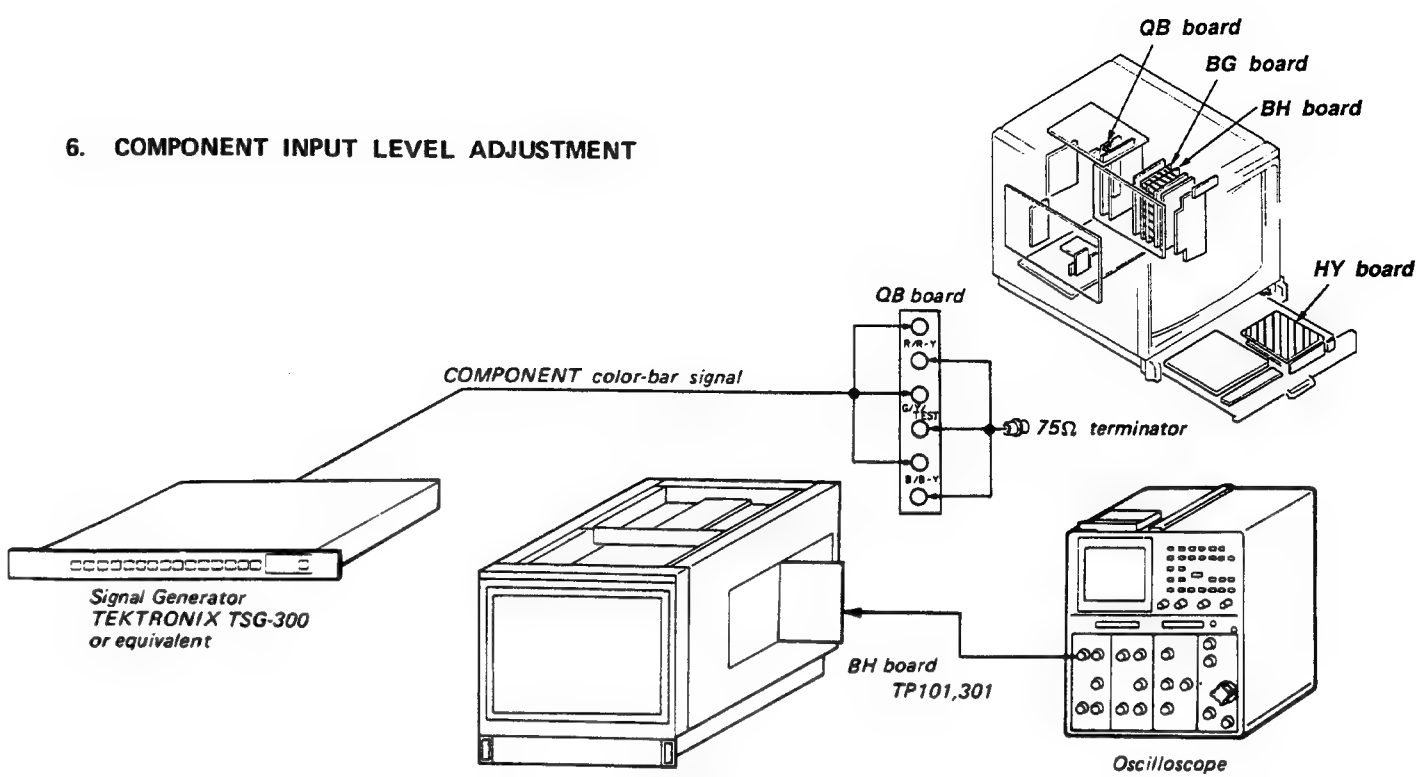


Fig. 5-3



6. COMPONENT INPUT LEVEL ADJUSTMENT



- Complete the connections as shown in Fig. 6-1.
 - FORMAT button (SUB CONTROL PANEL)..... YUV
- Connect an oscilloscope to the TP-101 of BH board.
- Adjust RV21 of BG board so that the output waveform becomes flat. (Fig. 6-2)
- Connect an oscilloscope to the TP301 of BH board.
- Adjust RV22 of BG board so that the input waveform becomes flat. (Fig. 6-3)

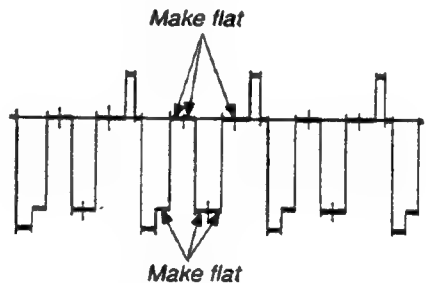


Fig. 6-2

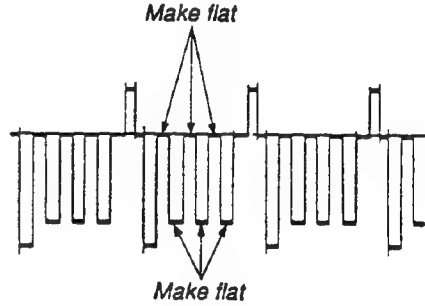
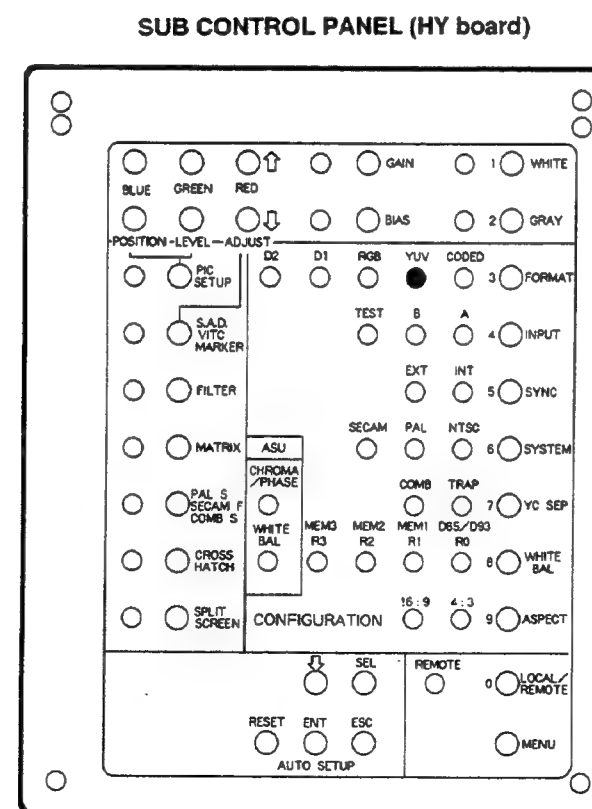
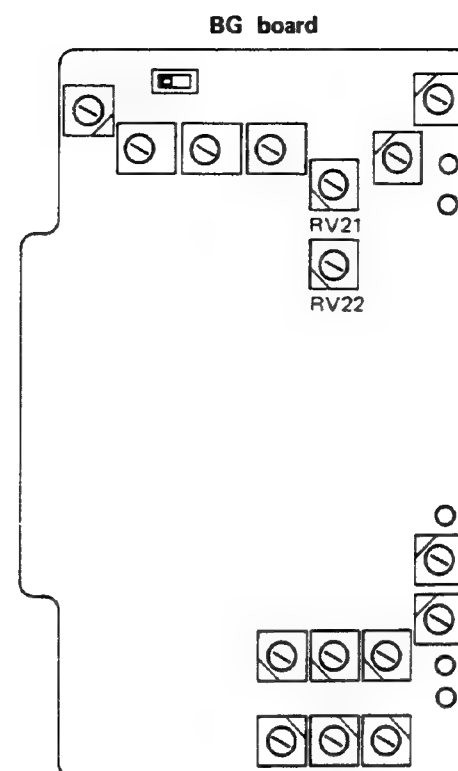
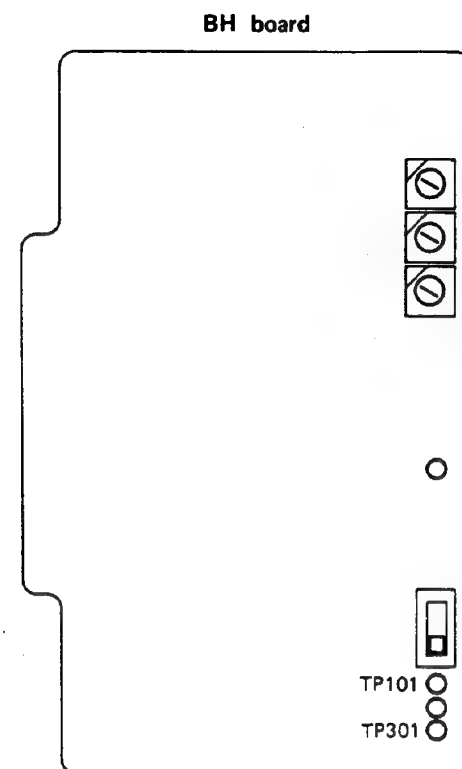
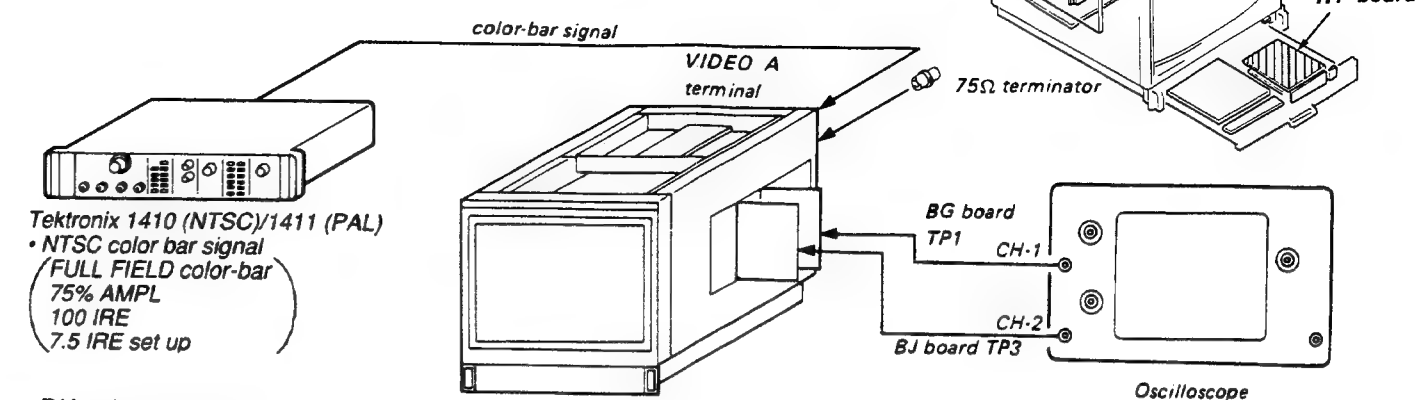


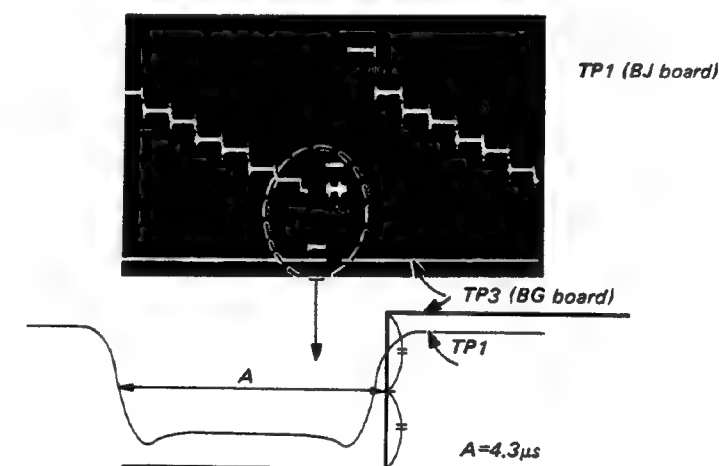
Fig. 6-3



7. BJ Board BURST GATE PULSE ADJUSTMENT



1. Input a color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP3 of BJ board.
3. Adjust RV8 of BJ board so that the width A is $4.3\mu s$ as shown in Fig. 7-1.



* Adjust (A), from SYNC fall to B.G.P. (BURST GATE PULSE) rise, to $4.3\mu s$.

Fig. 7-1

4. Adjust RV4 of BJ board so that the burst gate pulse width is $3.9\mu s$ as shown in Fig. 7-2.

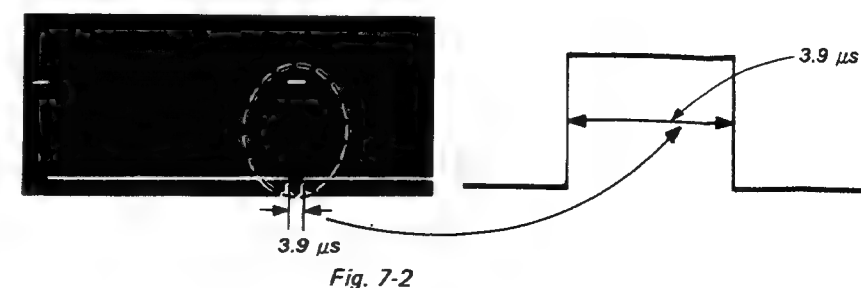
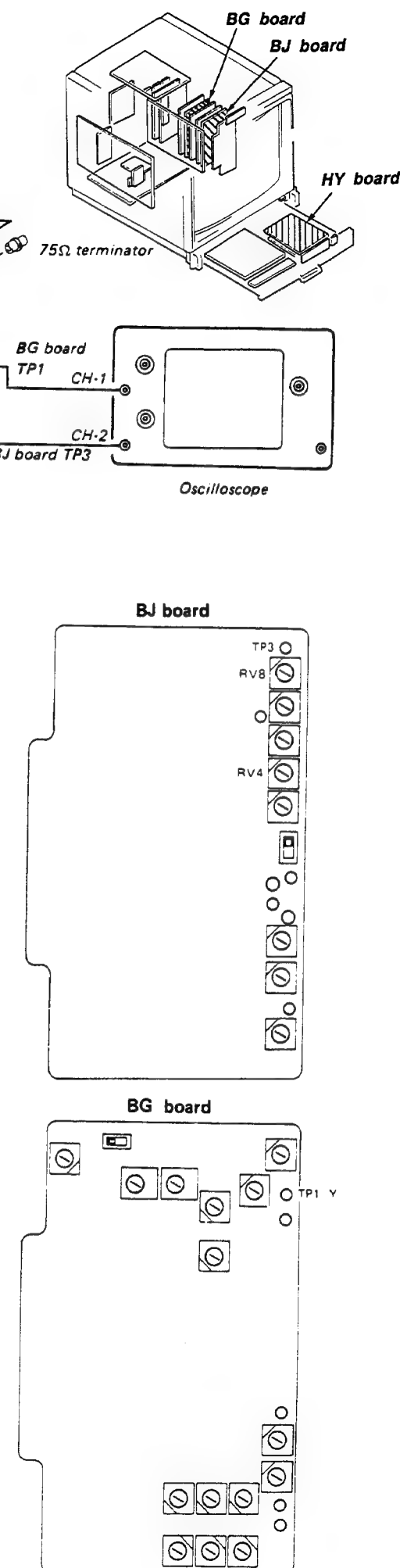
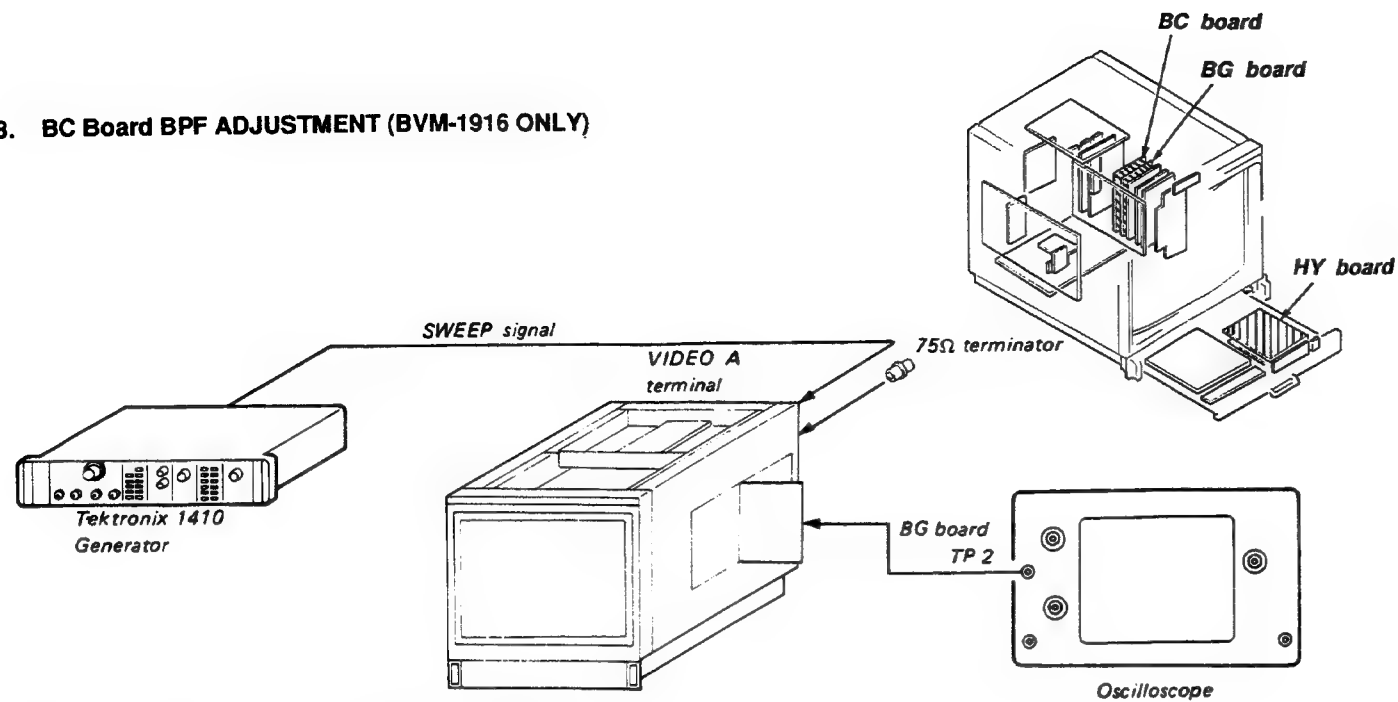


Fig. 7-2



8. BC Board BPF ADJUSTMENT (BVM-1916 ONLY)



- YC SEP button (SUB CONTROL PANEL) TRAP
- 1. Input SWEEP signal to the VIDEO A terminal of the set.
- 2. Connect an oscilloscope to the TP2 on the BG board.
- 3. Make the V/dw of oscilloscope into VARIABLE, and match the upper section of waveform to 7 div as shown in Fig. 8-1.

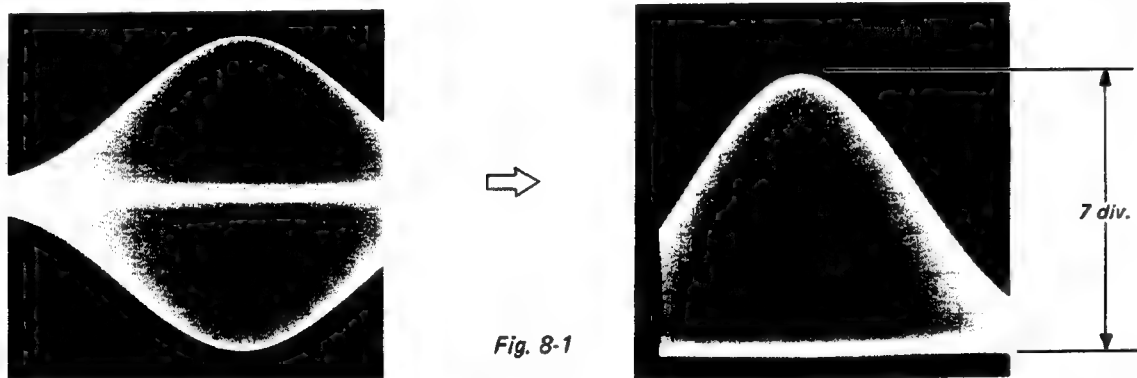


Fig. 8-1

- 4. Adjust L3 on the BC board so that A is equal to B as shown in Fig. 8-2.

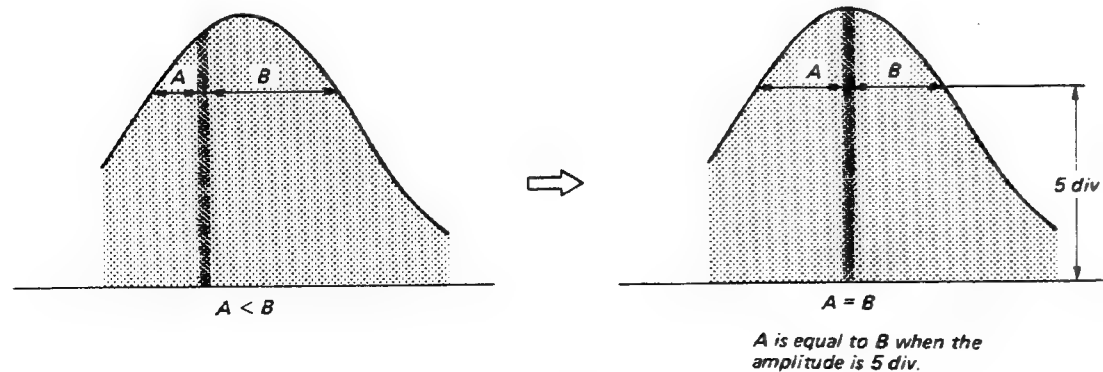
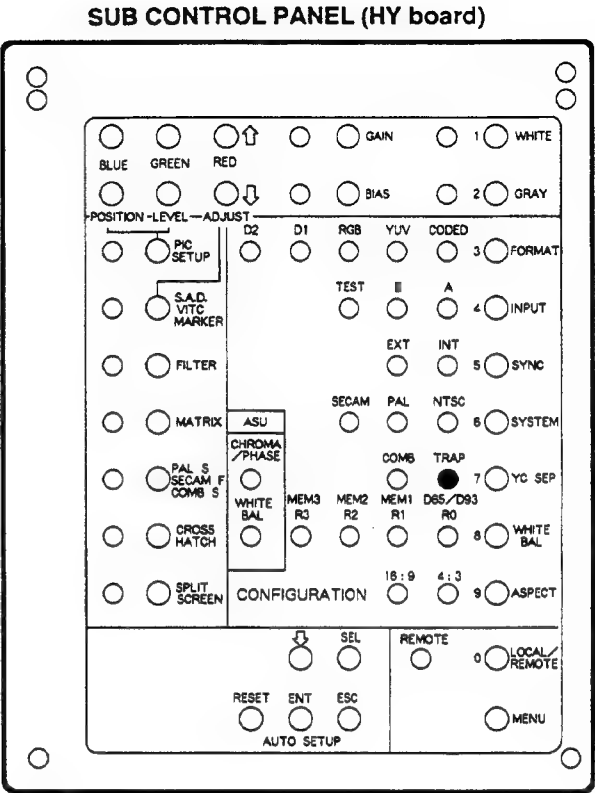
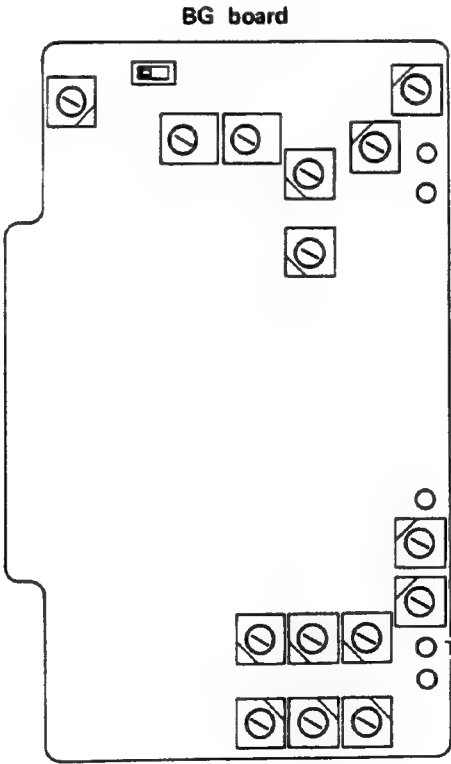
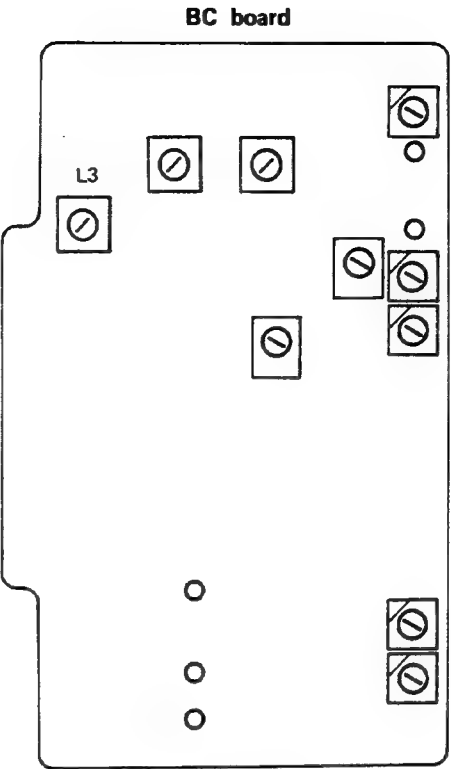
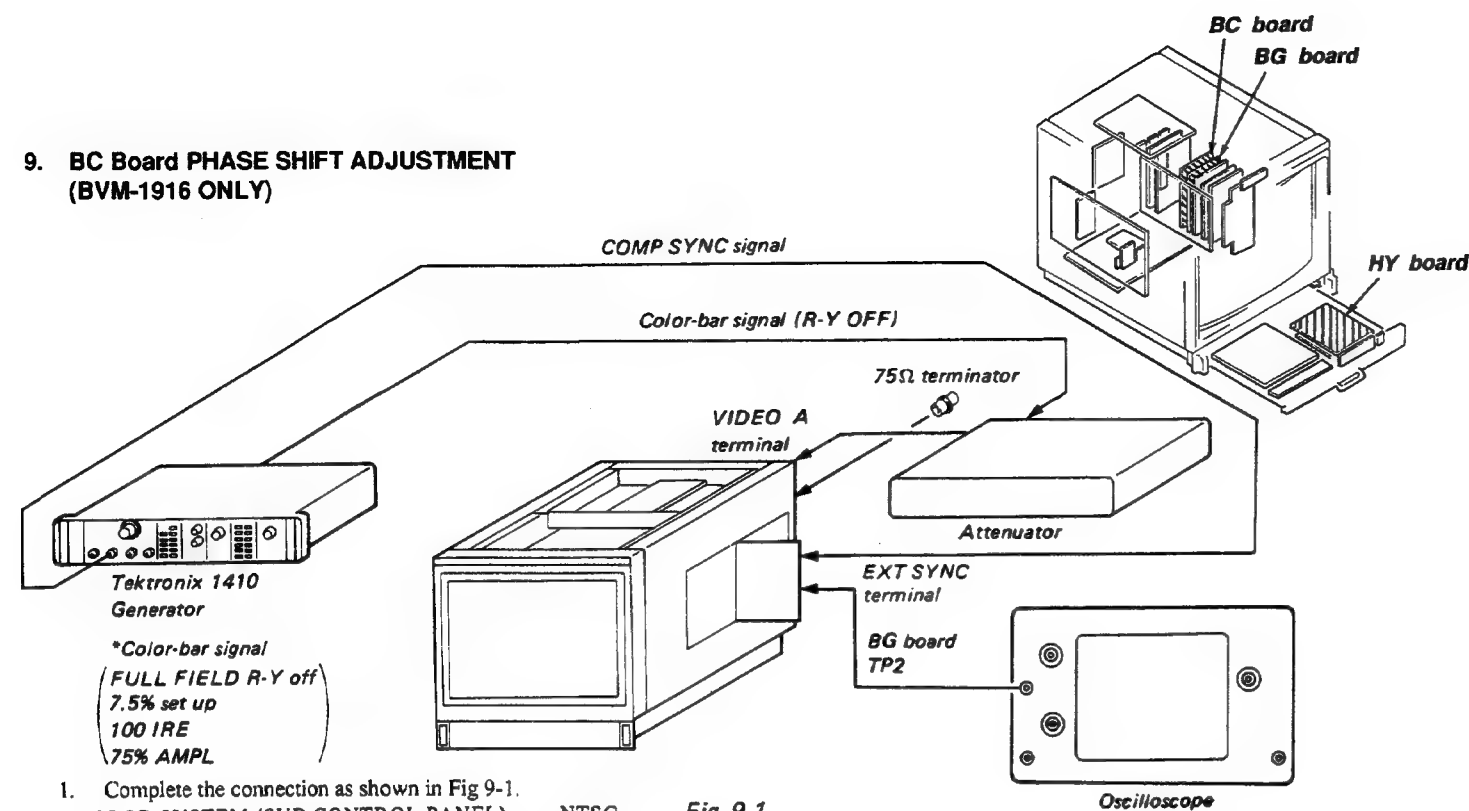


Fig. 8-2



9. BC Board PHASE SHIFT ADJUSTMENT (BVM-1916 ONLY)



1. Complete the connection as shown in Fig 9-1.
 - COLOR SYSTEM (SUB CONTROL PANEL)..... NTSC
 - FORMAT button (SUB CONTROL PANEL)..... CODED
 - YC SEP button (SUB CONTROL PANEL) TRAP
 - SYNC button (SUB CONTROL PANEL)..... EXT
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the waveform flat with the PHASE control of front panel as shown in Fig. 9-2.

Fig. 9-1

4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV3 on the BC board so that the output waveform becomes flat as shown in Fig. 9-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.

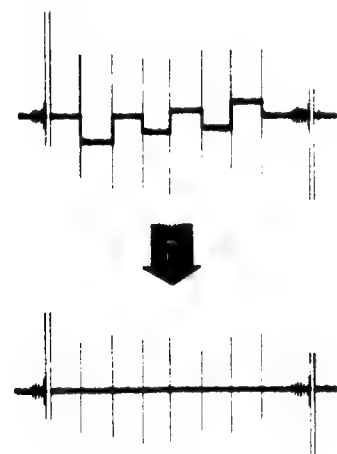
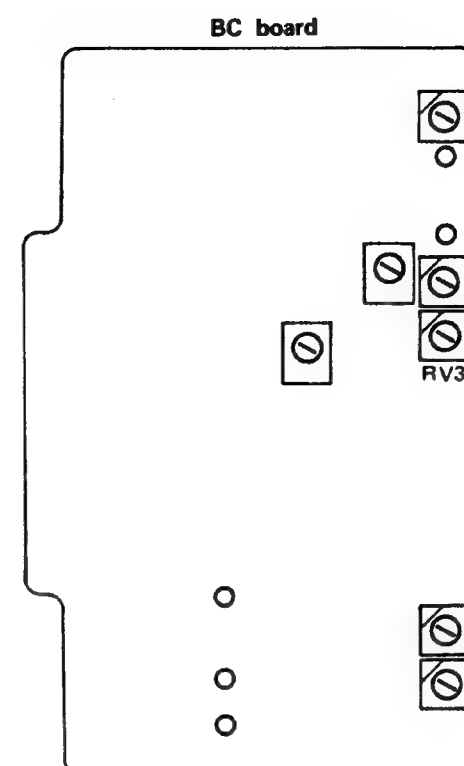
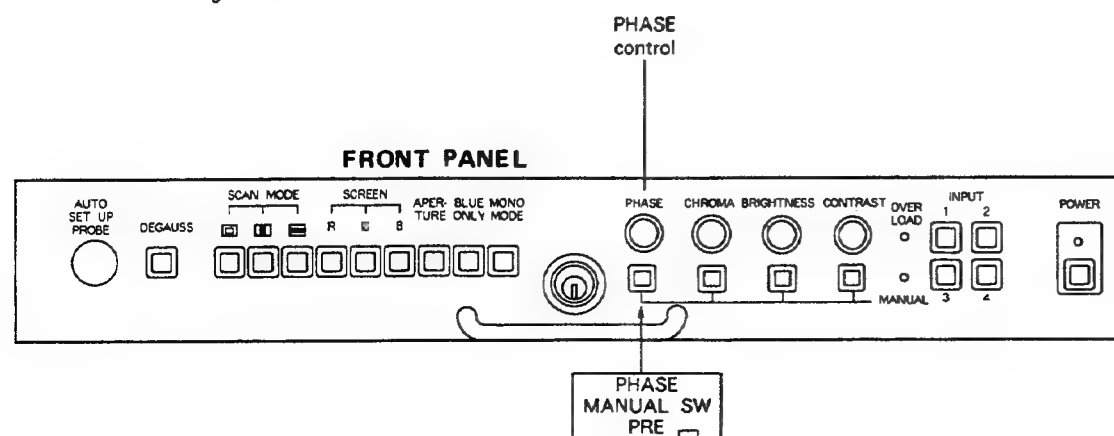
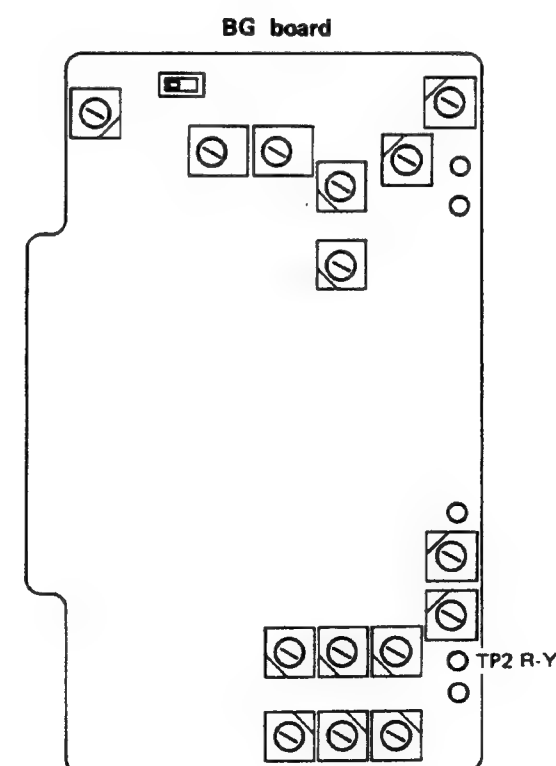
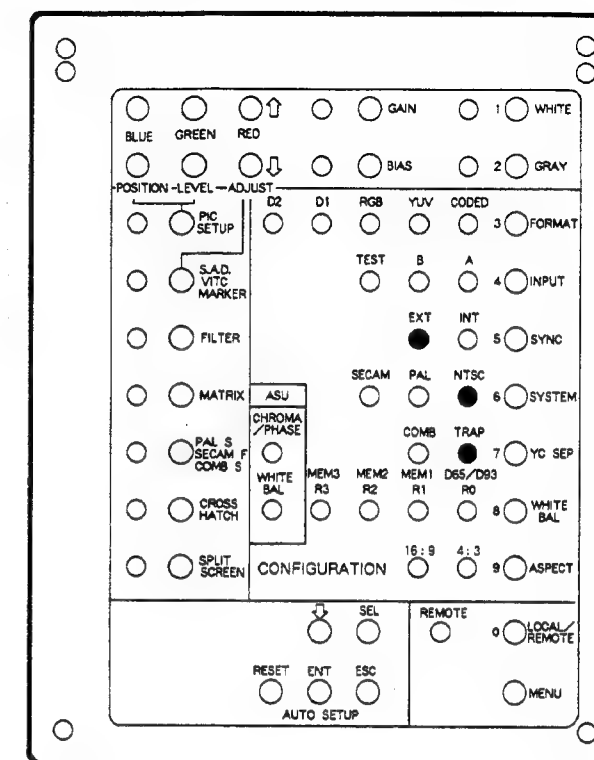


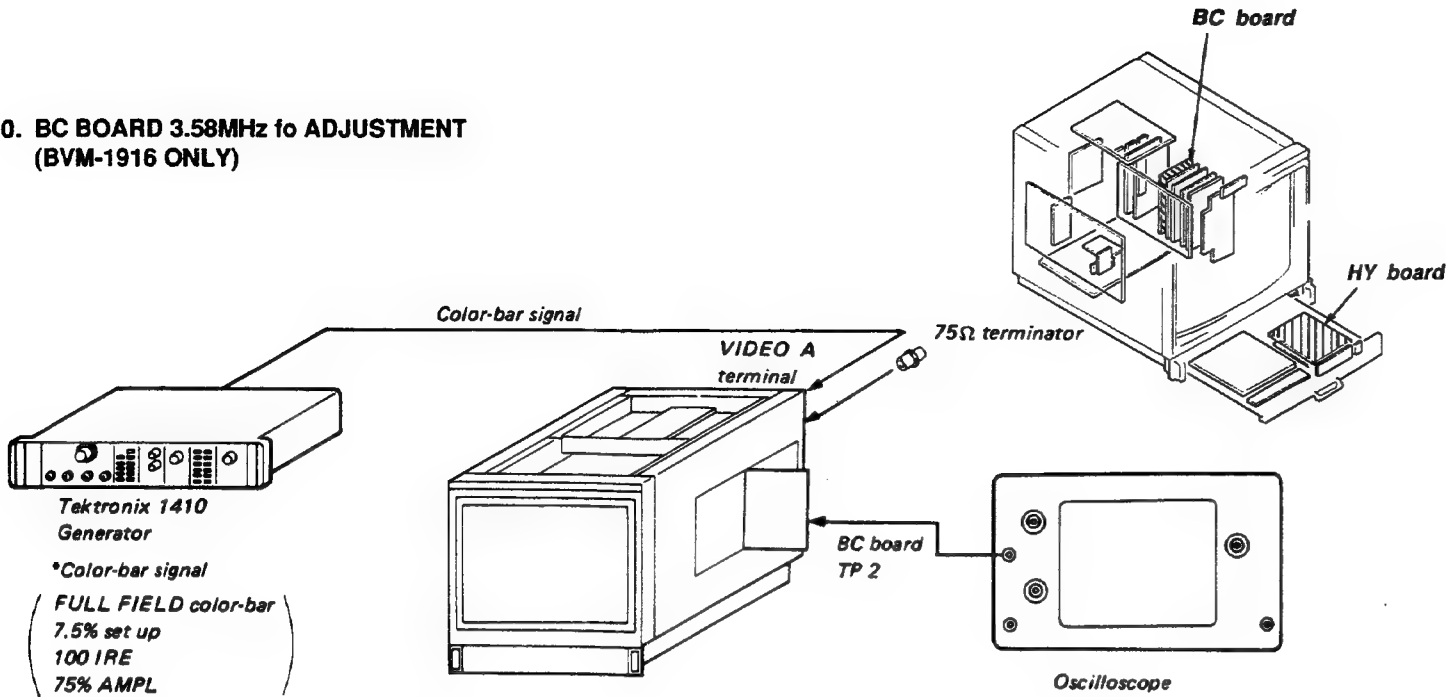
Fig. 9-2



SUB CONTROL PANEL (HY board)



10. BC BOARD 3.58MHz to ADJUSTMENT
(BVM-1916 ONLY)



- YCSEP button (SUB CONTROL PANEL) TRAP
1. Input color-bar signal to the VIDEO A terminal of the set.
 2. Connect an oscilloscope to the TP2 of BC board.
 3. Short-circuit between TP6 and TP7 of BC board with a jumper wire.
 4. Adjust CV2 of BC board so that the output waveform is shifted slowly as shown in Fig. 10-1.
 5. Turn off the power of this monitor, and disconnect TP6 and TP7 of BC board.

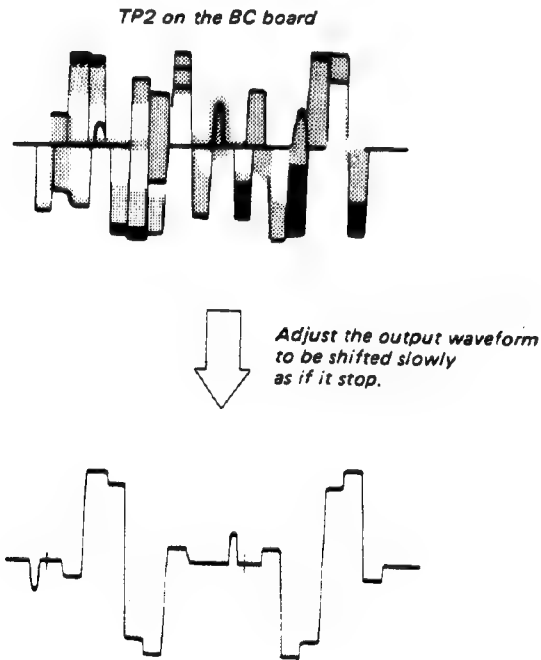
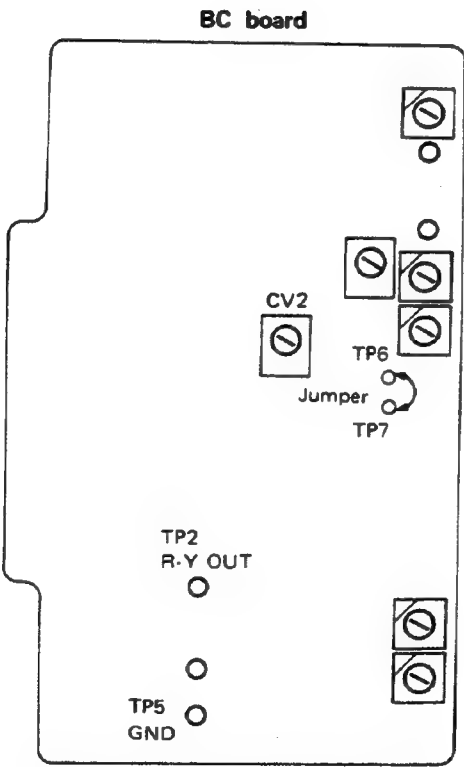
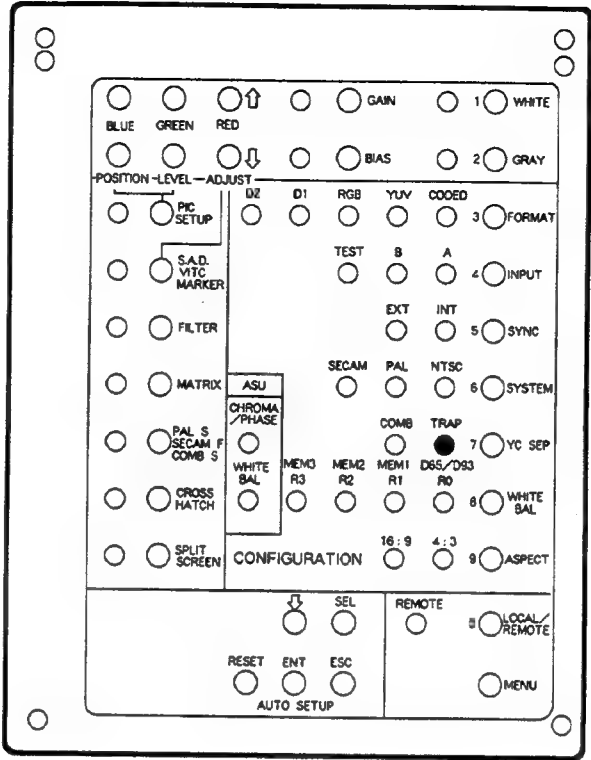


Fig. 10-1



SUB CONTROL PANEL (HY board)



11. BC Board COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-1916 ONLY)

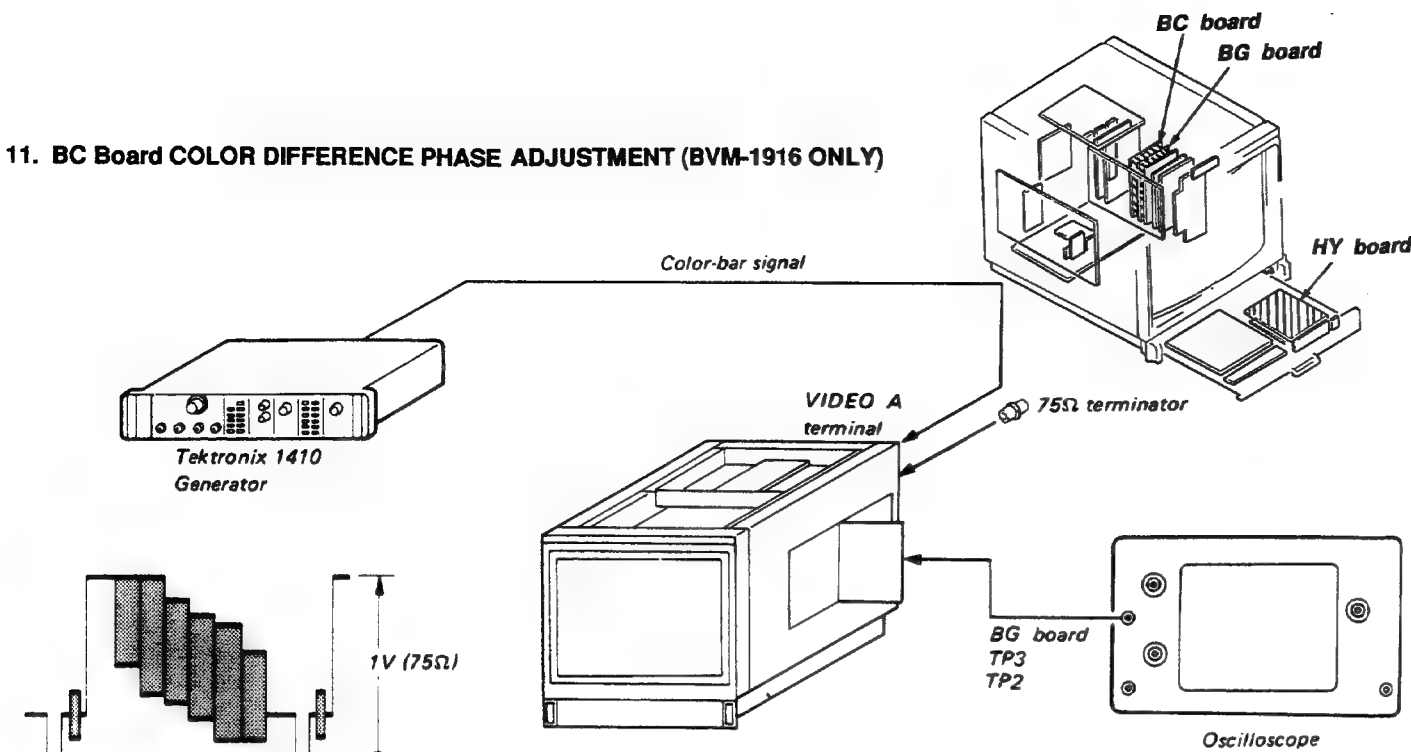


Fig. 11-1

• YC SEP button (SUB CONTROL PANEL) TRAP

1. Complete the connections as shown in Fig. 11-1.
2. Turn on the power of this monitor.

B-Y System Adjustment

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV2 on the BC board so that the output waveform is flat. (See Fig. 11-2.)

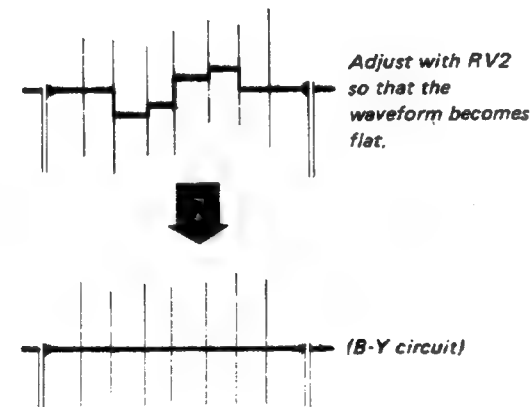


Fig. 11-2

Quad Adjustment

5. Connect the oscilloscope probe to TP2 on the BG board. Turn on the B-Y signal of the signal generator, and turn off the (R-Y) signal. Then adjust CV1 on the BC board so that the output waveform is flat. (See Fig. 11-3)
6. Repeat the steps 3 to 6.

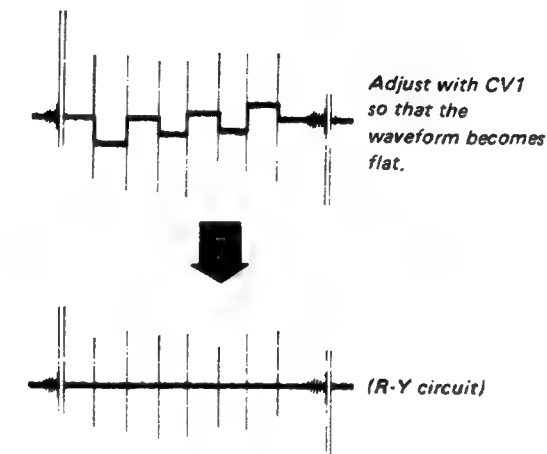
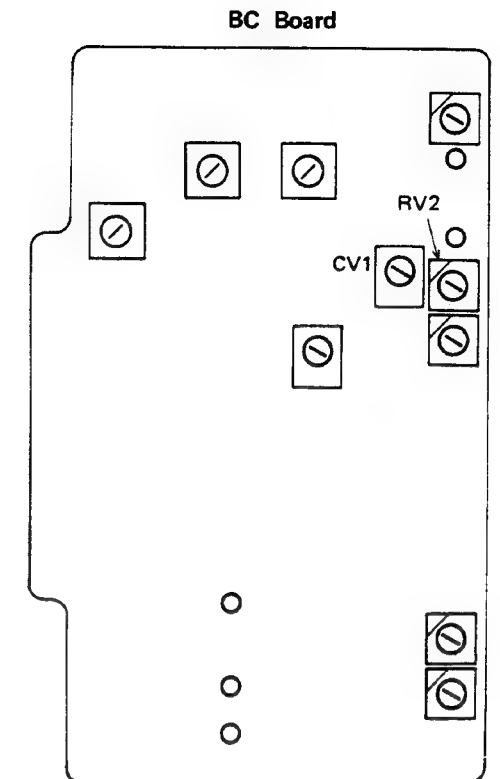
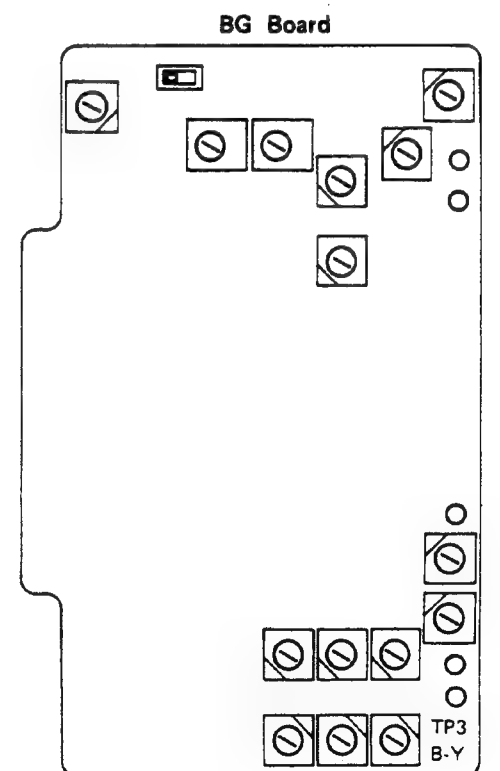
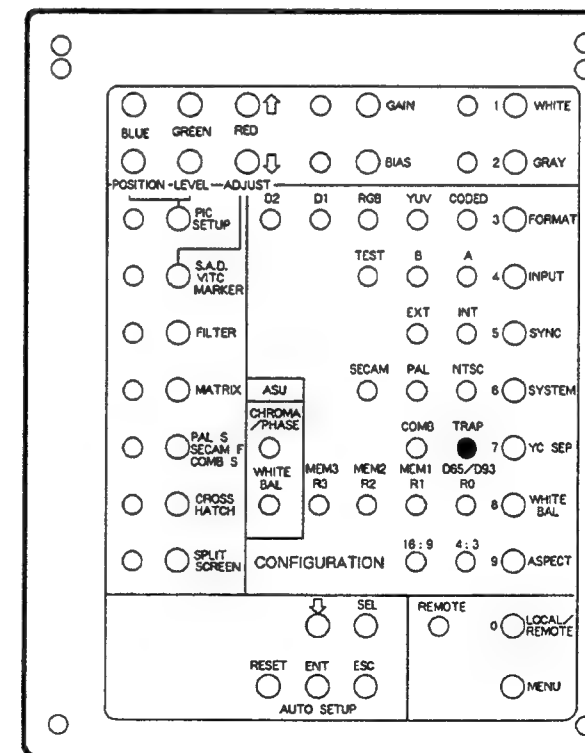


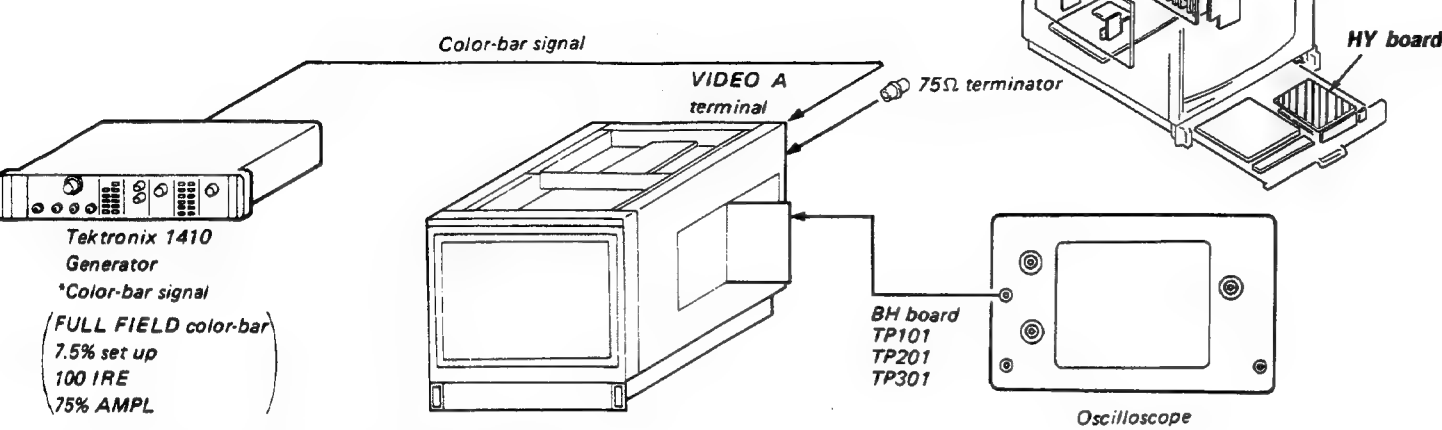
Fig. 11-3



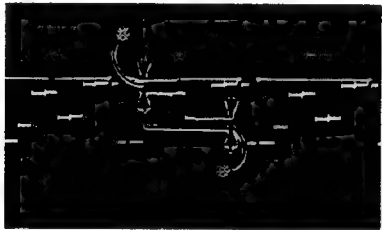
SUB CONTROL PANEL (HY board)



12. BC Board COLOR DIFFERENCE LEVEL ADJUSTMENT (BVM-1916 ONLY)



- YC SEP button (SUB CONTROL PANEL) TRAP
- 1. Input color-bar signal to the VIDEO A terminal of the set.
- 2. Connect an oscilloscope to the TP101 of BH board.
- 3. Adjust RV4 of BC board so that the levels with ⚡ is flat as shown in Fig. 12-1.



TP101 R OUT

Fig. 12-1

• Adjust the levels with ⚡ to be flat respectively using RV4 of BC board.

- 4. Connect an oscilloscope to the TP301 of BH board.
- 5. Adjust RV5 of BC board so that the output waveform as shown in Fig. 12-2.

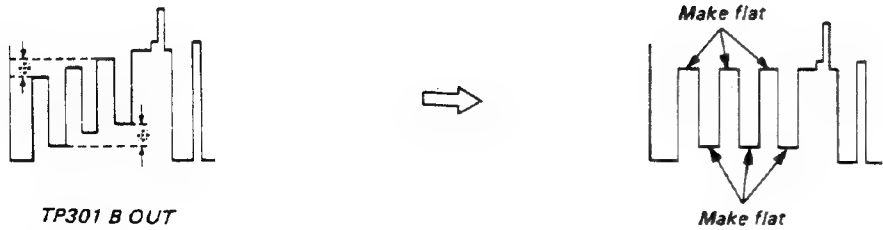
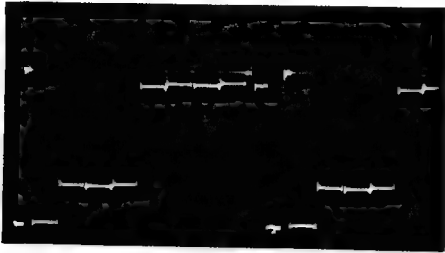


Fig. 12-2

- 6. Connect an oscilloscope to the TP201 of BH board.
- 7. Adjust RV4 and RV5 of BG board so that the INPUT waveform becomes flat as shown in Fig. 12-3.



TP201 G OUT

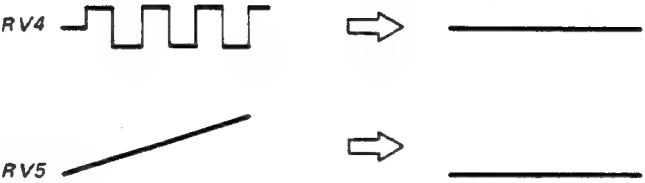
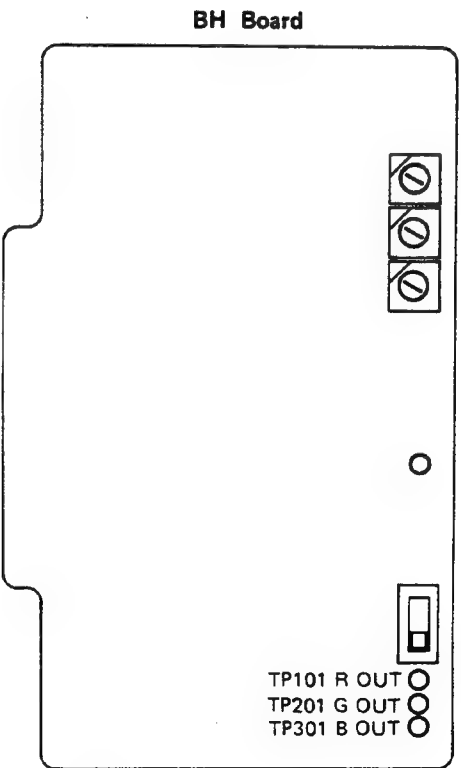
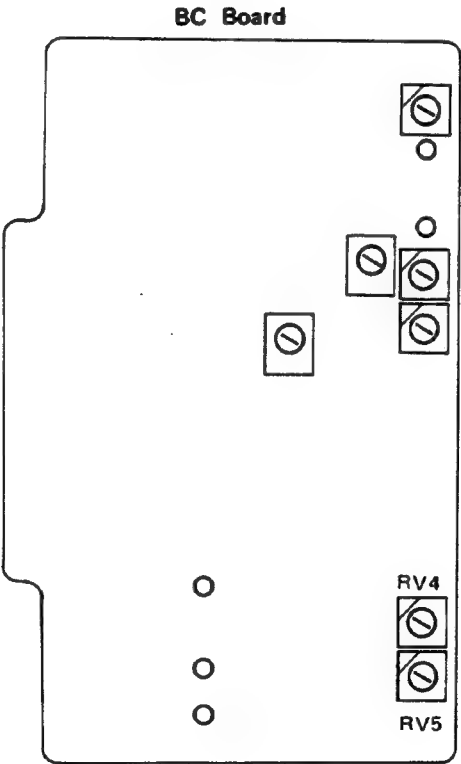
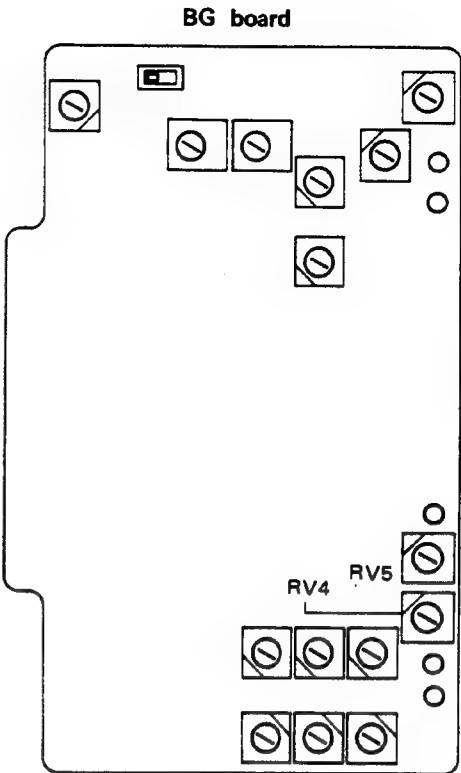
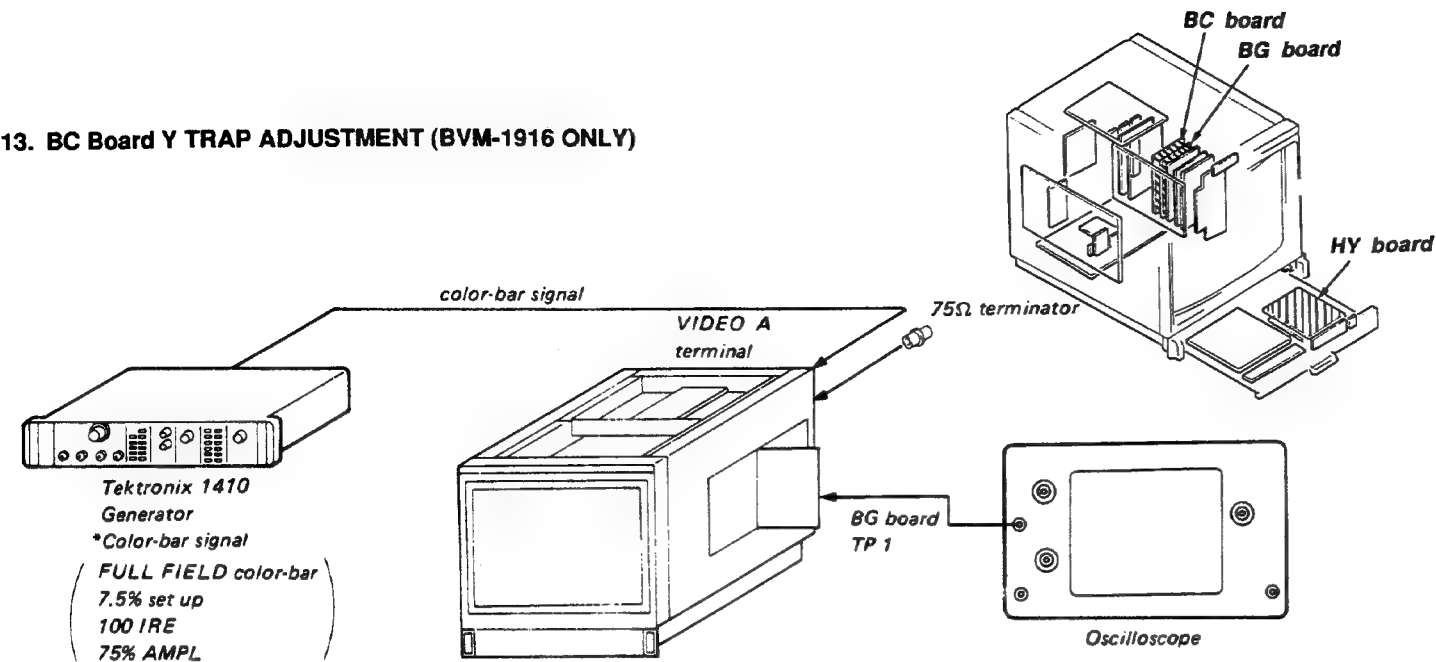


Fig. 12-3



13. BC Board Y TRAP ADJUSTMENT (BVM-1916 ONLY)



- COLOR SYSTEM button (SUB CONTROL PANEL)..... NTSC
 - YC SEP button (SUB CONTROL PANEL)..... TRAP
1. Input color-bar signal to VIDEO A terminal of the set.

2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BC board so that 3.58MHz subcarrier is minimum as shown in Fig. 13-1.

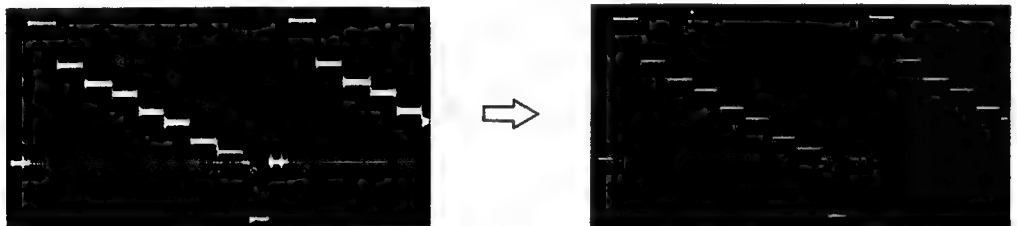
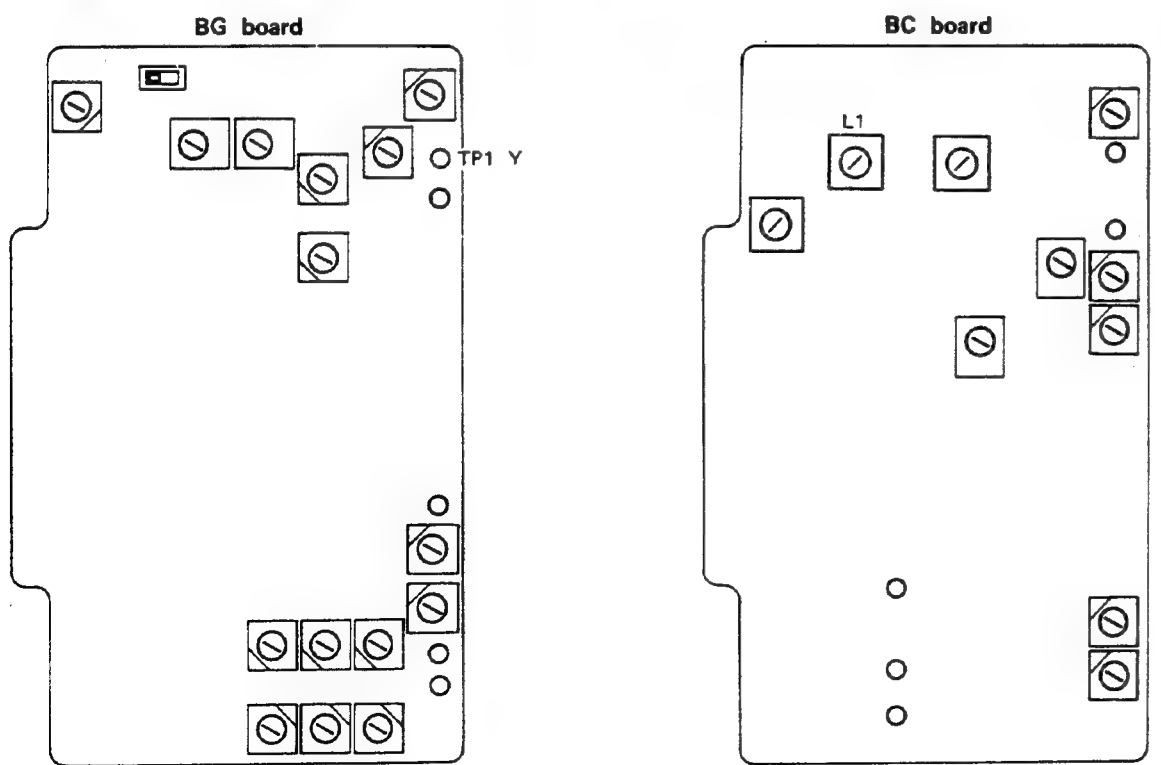
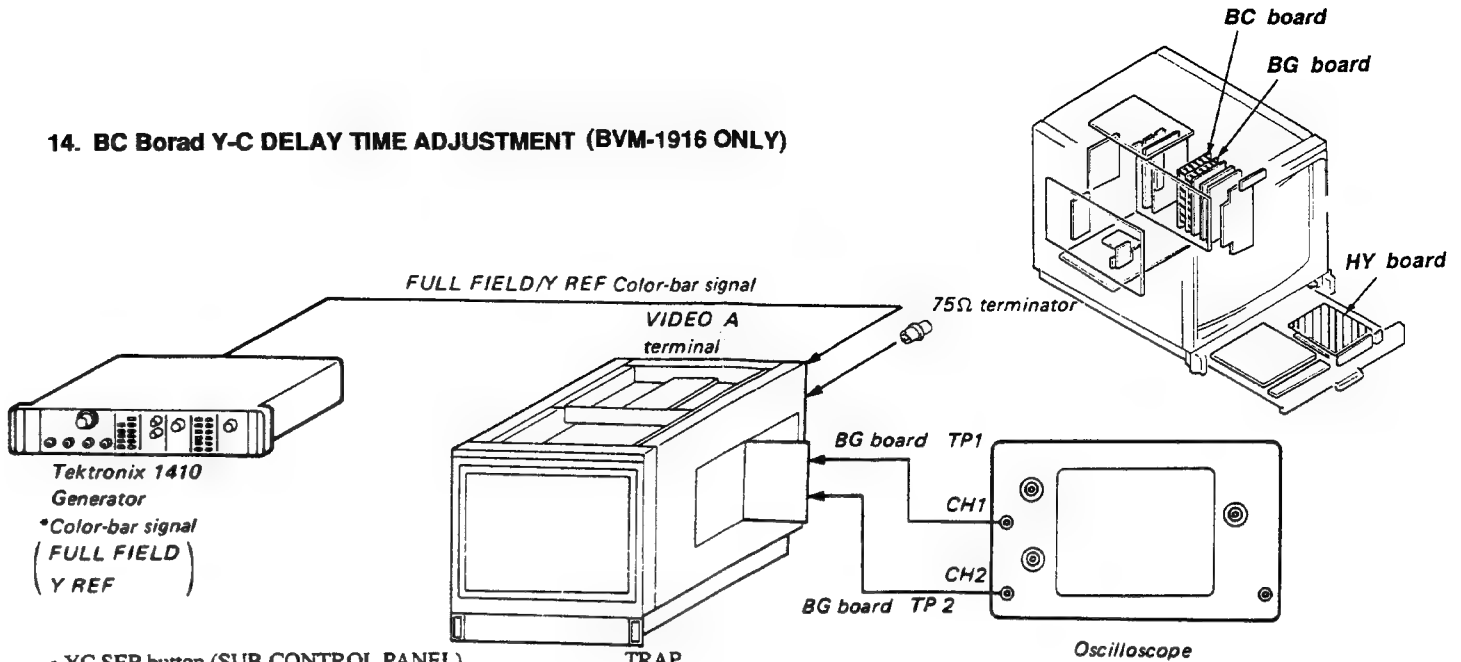


Fig. 13-1



14. BC Board Y-C DELAY TIME ADJUSTMENT (BVM-1916 ONLY)



- YC SEP button (SUB CONTROL PANEL)..... TRAP
1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.
2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV1 of BC board so that the output waveform as shown in Fig. 14-1.

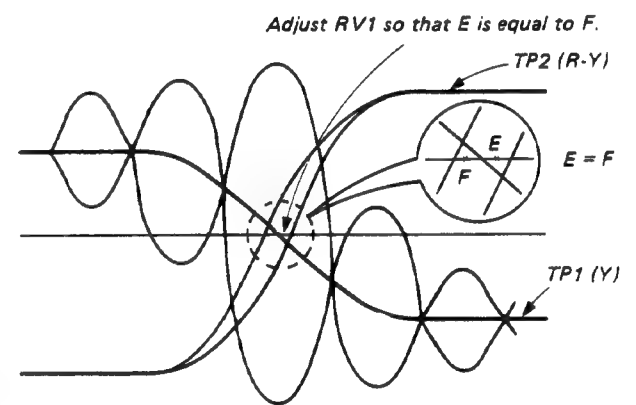
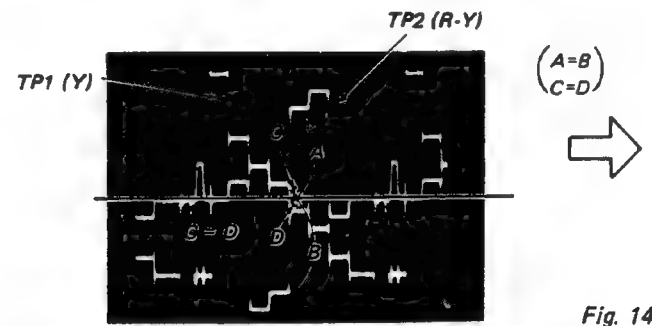
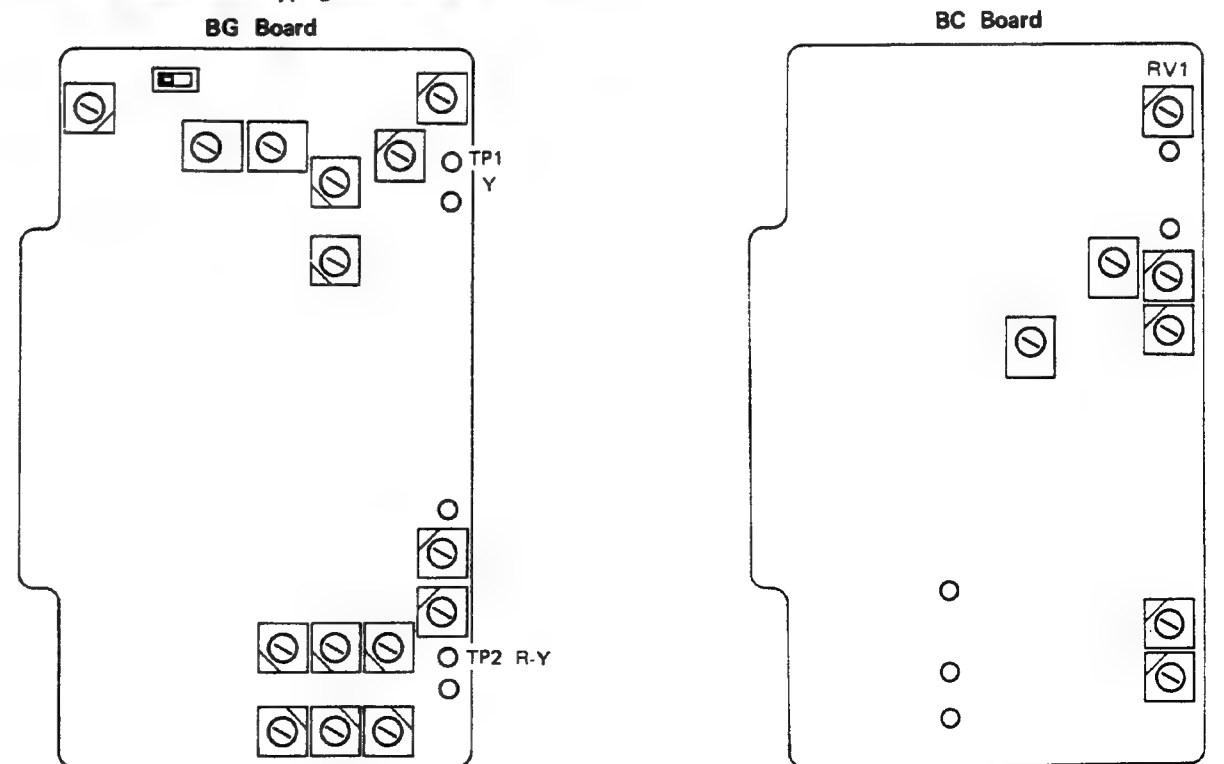
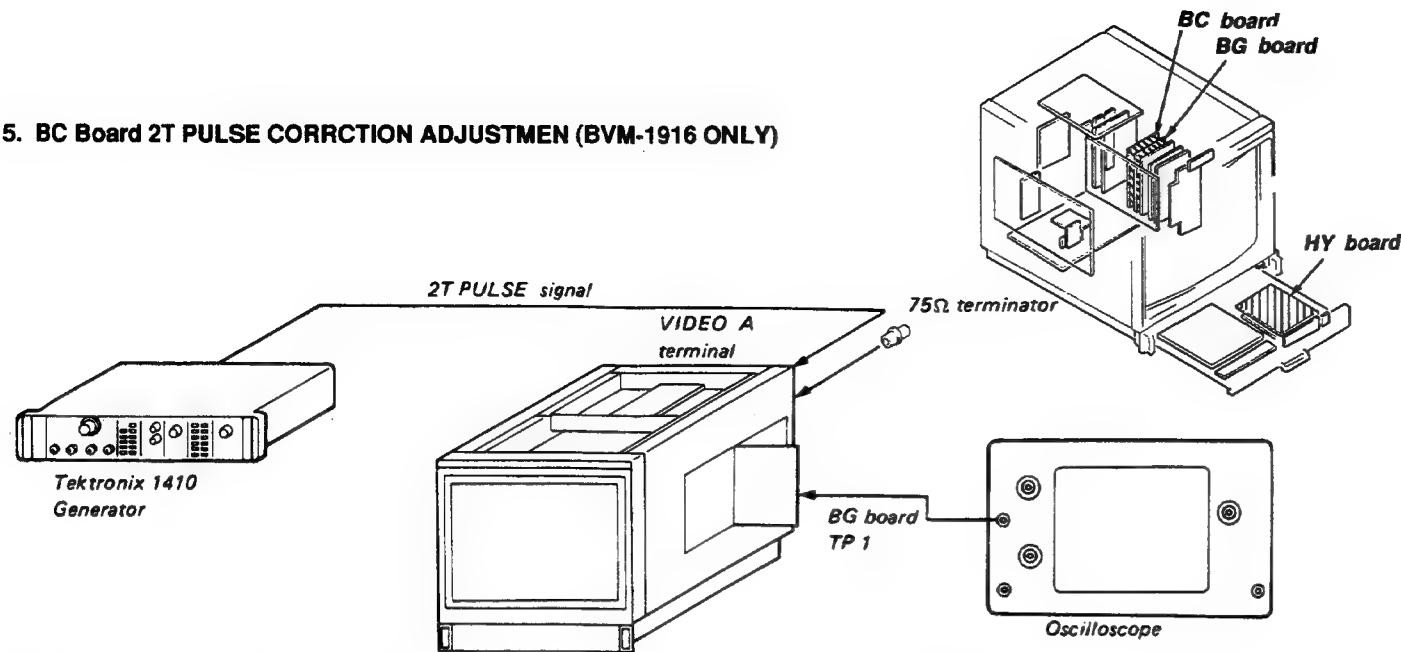


Fig. 14-1

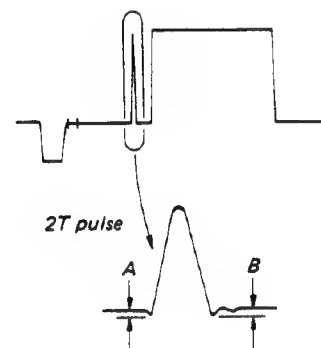


15. BC Board 2T PULSE CORRECTION ADJUSTMEN (BVM-1916 ONLY)



• YC SEP button (SUB CONTROL PANEL) TRAP

1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BC board so that A is equal to B as shown in Fig. 15-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 15-1.

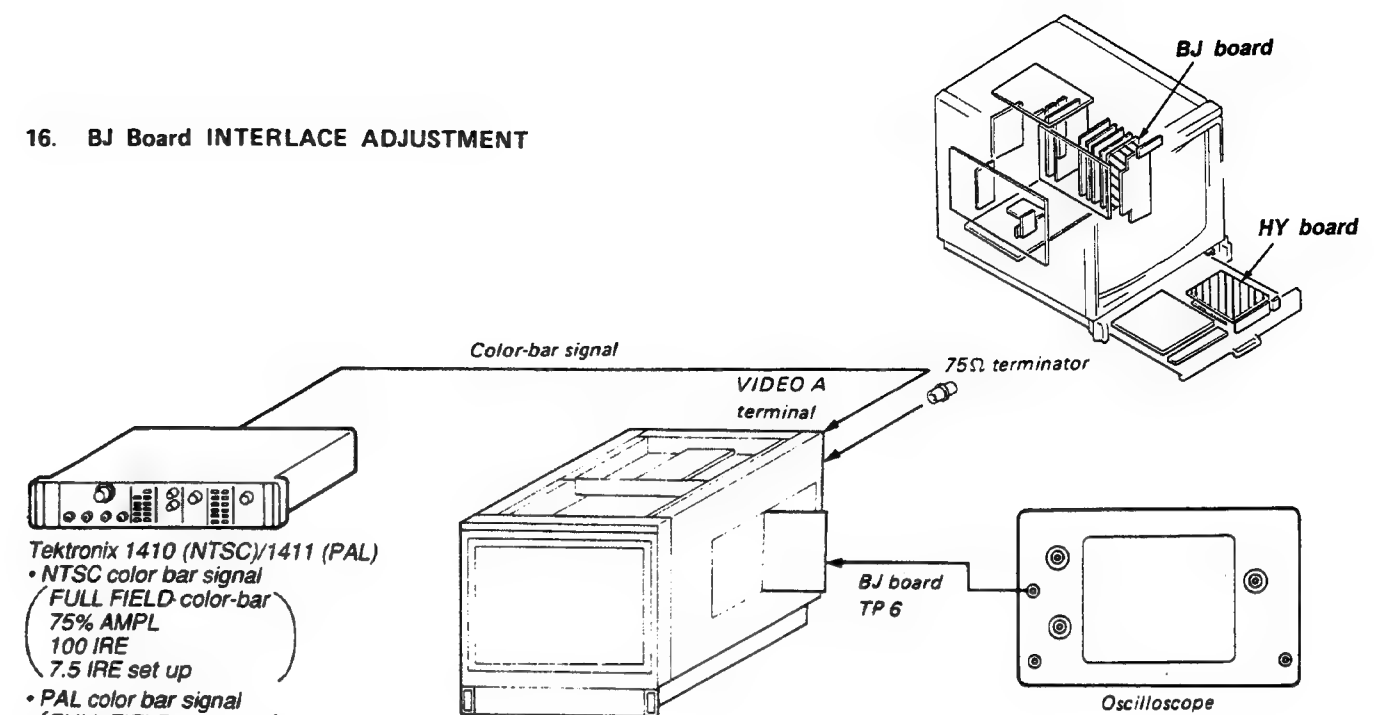


* Adjust L2 to obtain the condition $A = B$.

* The waveform balance should not be lost extremely.

Fig. 15-1

16. BJ Board INTERLACE ADJUSTMENT



• YC SEP button (SUB CONTROL PANEL) TRAP

1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP6 on the BJ board.
3. Adjust RV6 to obtain the waveform on the oscilloscope as shown in Fig. 16-1.

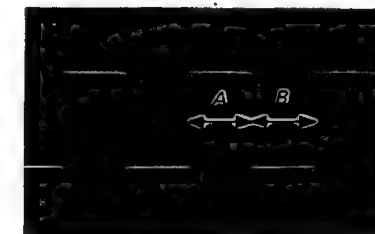
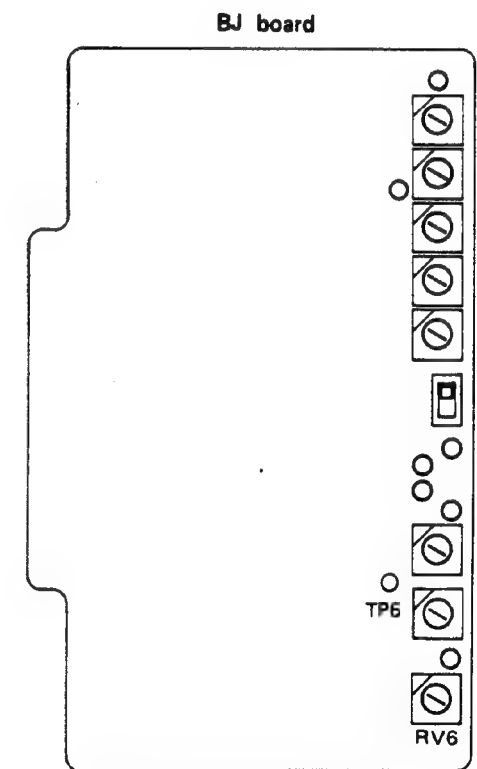
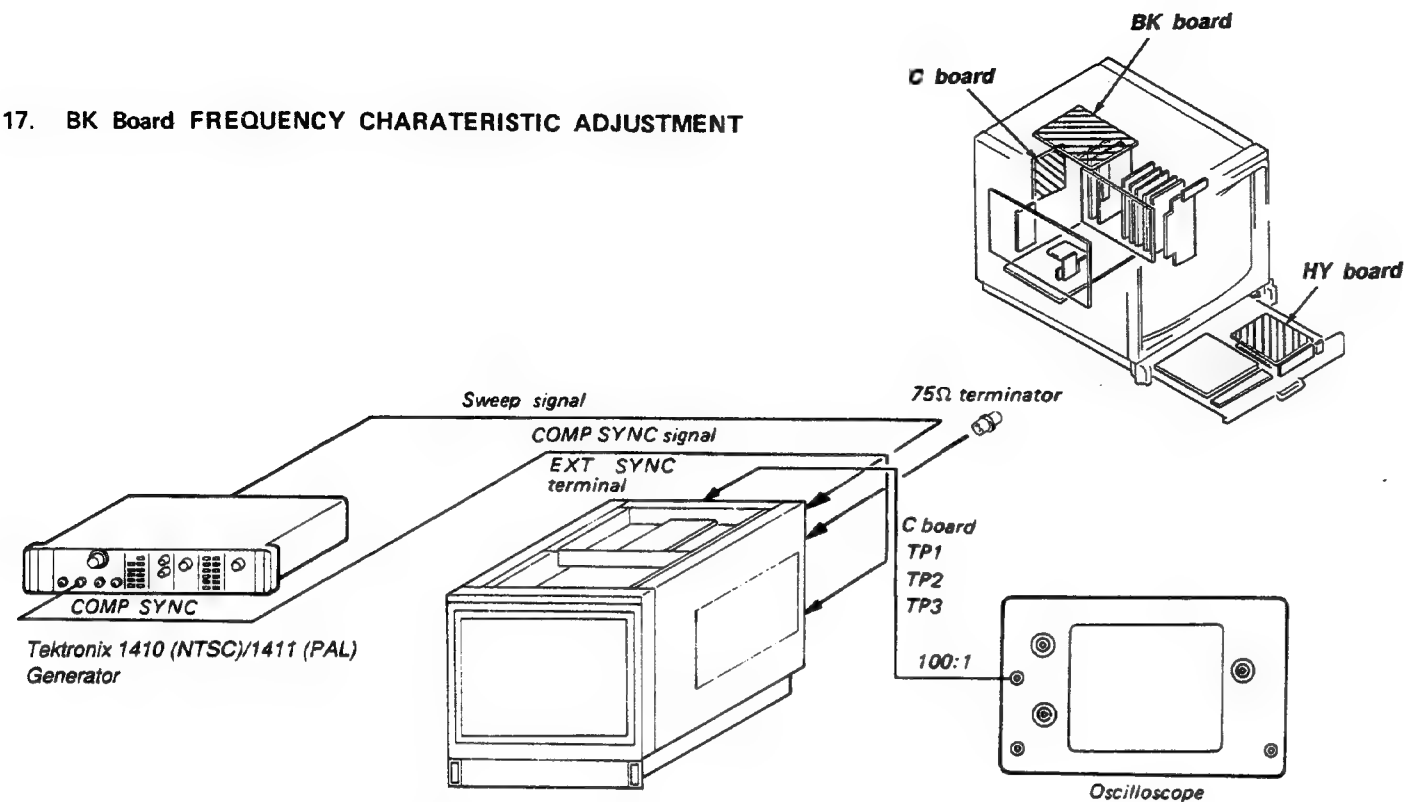



Fig. 16-1



17. BK Board FREQUENCY CHARACTERISTIC ADJUSTMENT



1. Input SWEEP signal to VIDEO A terminal of the set, and input COMP SYNC signal to EXT SYNC terminal of the set.
 - SYNC button (SUB CONTROL PANEL) EXT
 - MODE selector (FRONT PANEL) MONO ()
 - FILTER button (SUB CONTROL PANEL) ... OFF
2. Connect an oscilloscope to the TP1 on the C board.
*Probe: 100:1
3. Adjust CV101 and RV101 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.
4. Connect an oscilloscope to the TP2 on the C board.
5. Adjust CV201 and RV201 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.
6. Connect an oscilloscope to the TP3 on the C board.
7. Adjust CV301 and RV301 on the BK board so that output waveform becomes flat in a range of 0 to 8MHz as shown in Fig. 17-1.

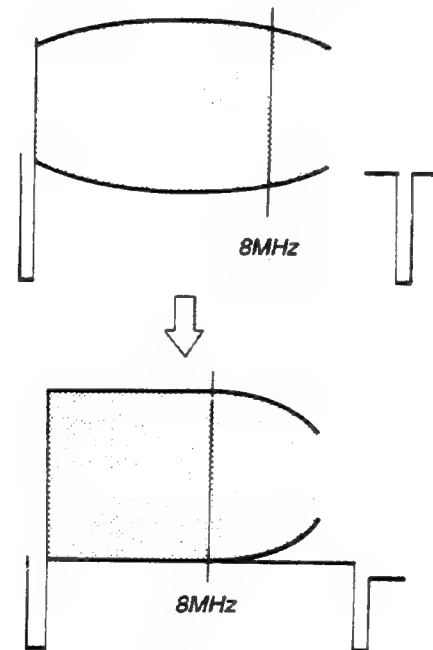
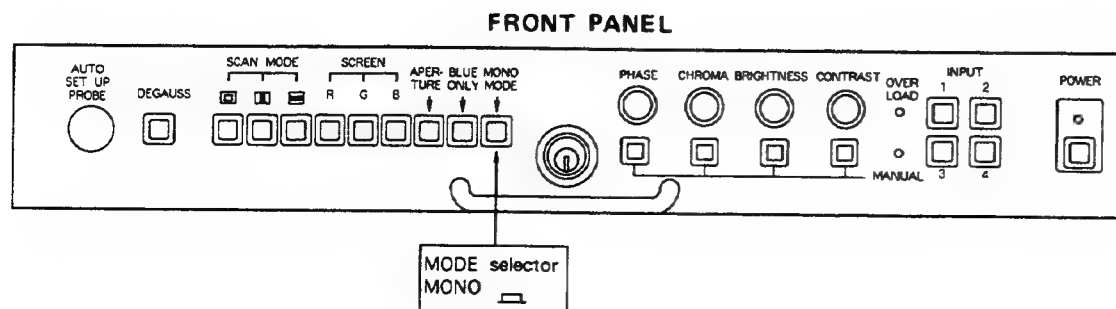
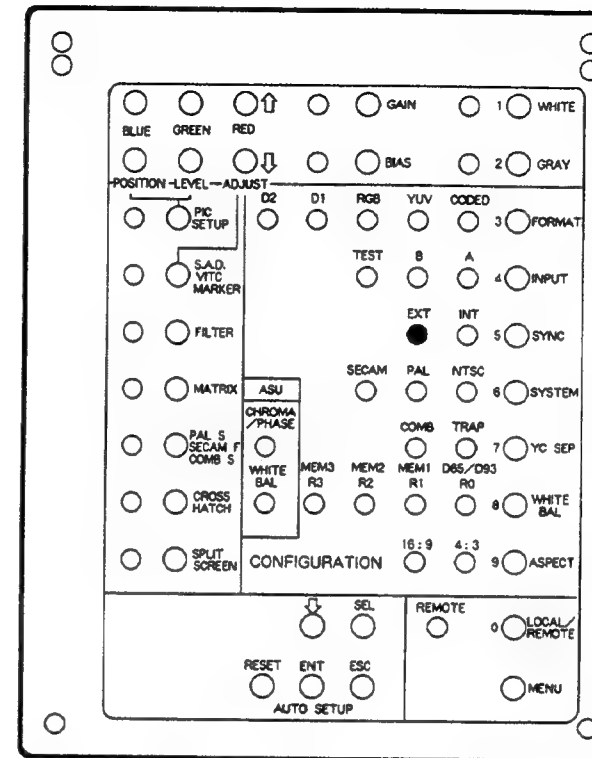


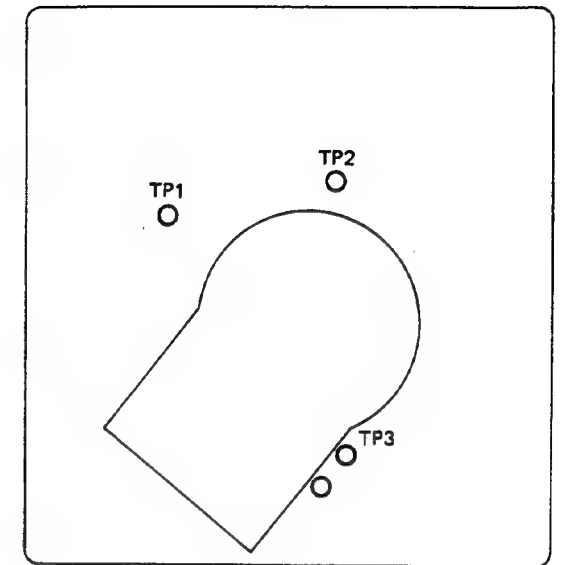
Fig. 17-1



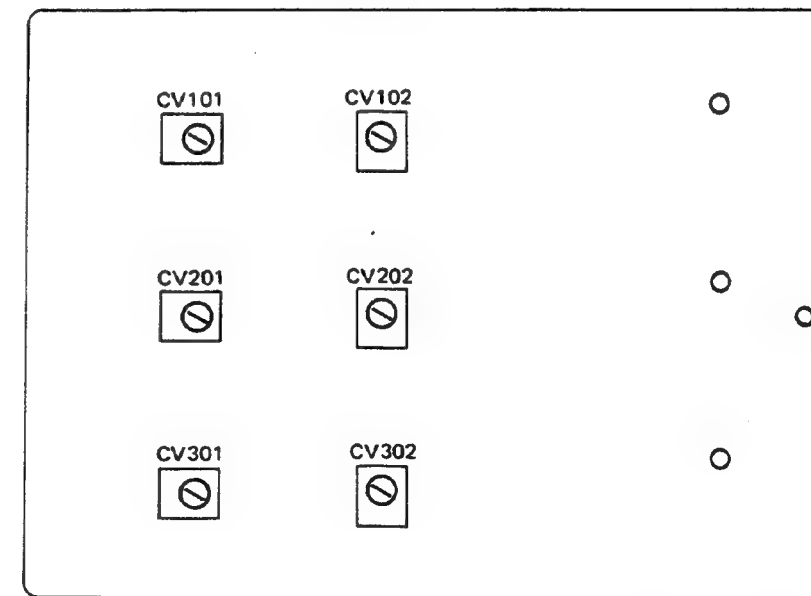
SUB CONTROL PANEL (HY board)



C board



BK board



18-1. BT Board Partial Adjustment



- ### Chroma Level Adjustment

-
- The center of oscilloscope
- A (White)
- B (Red)
- Fig. 18.1

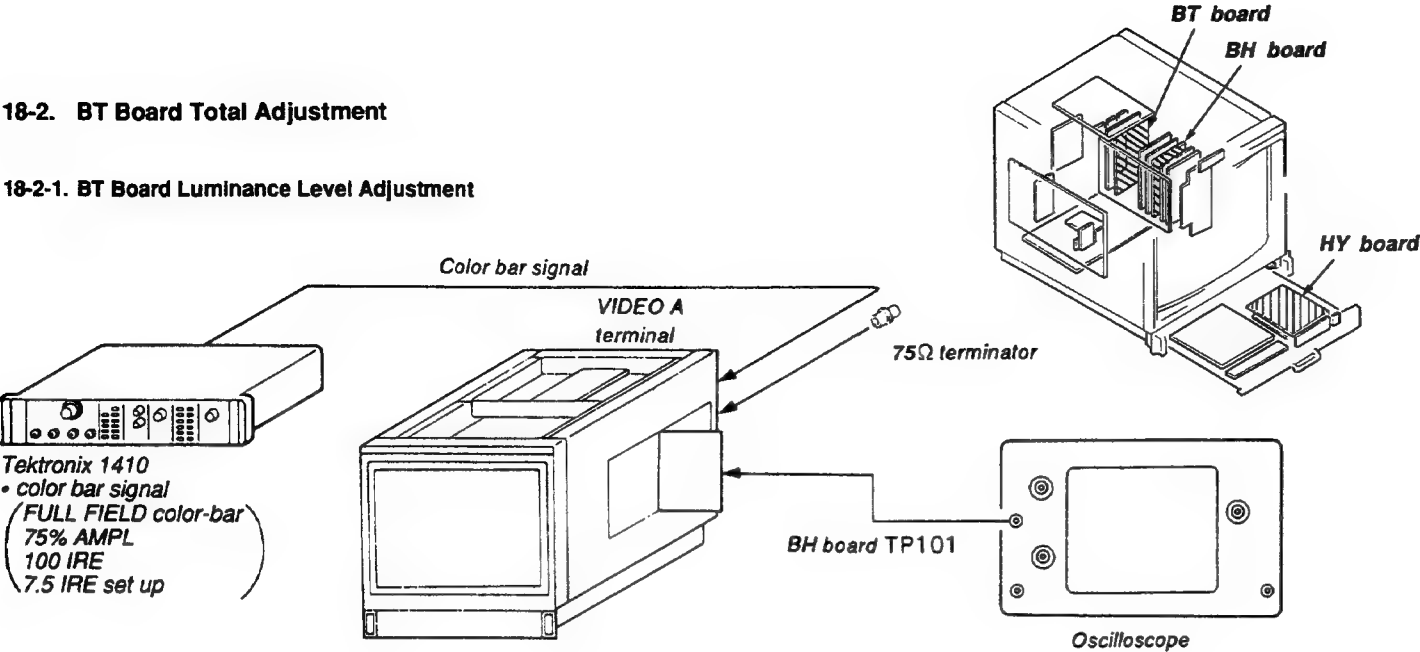
Fig. 18-1

4-47

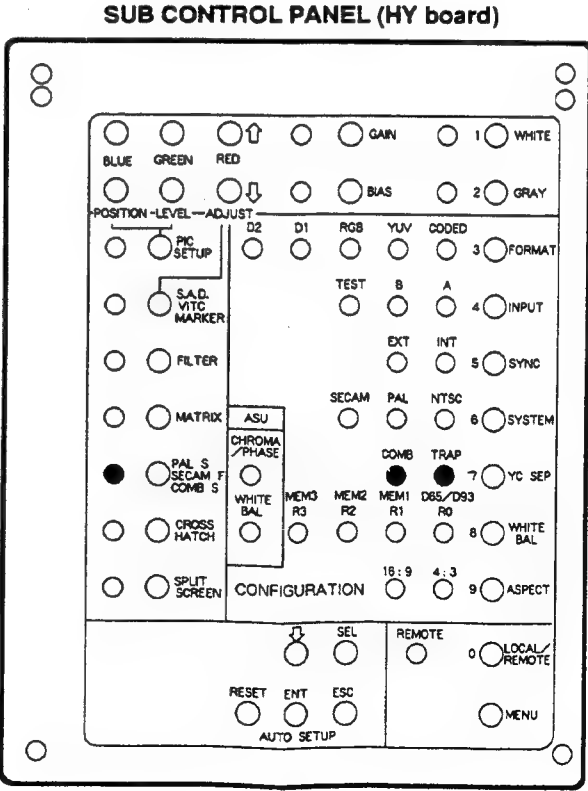
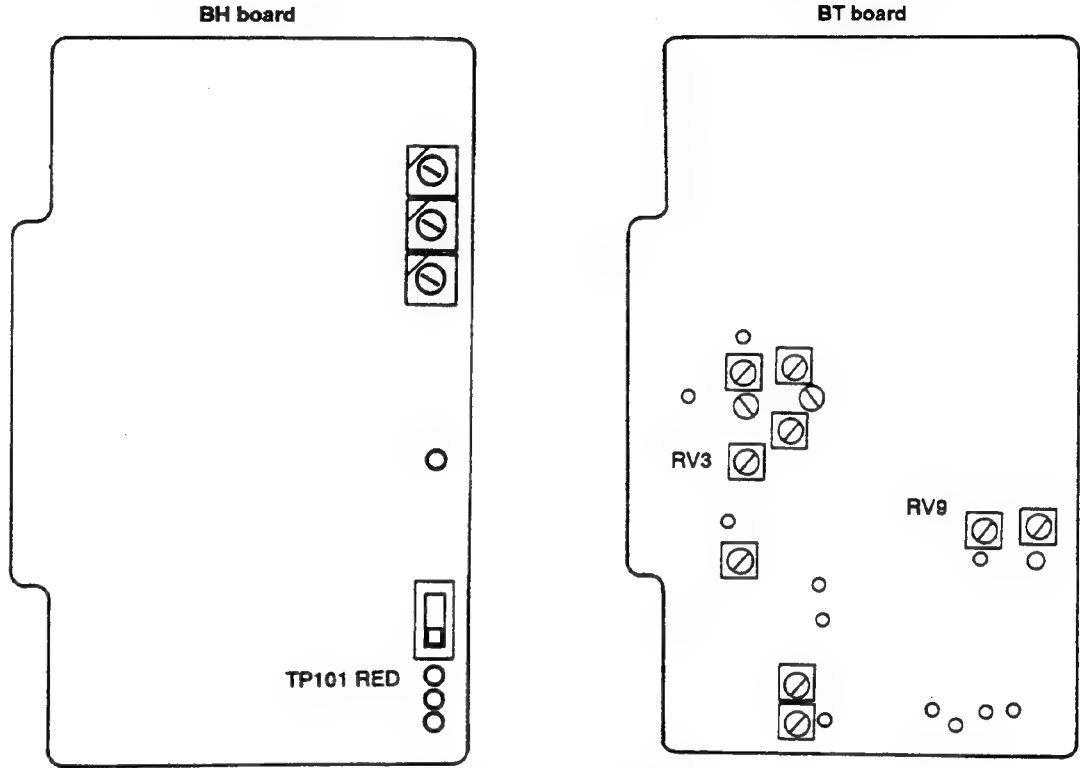
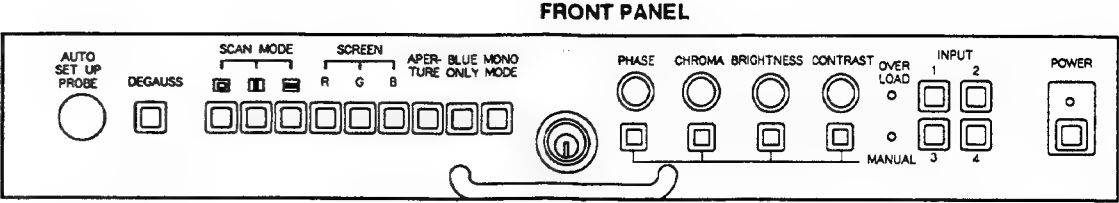
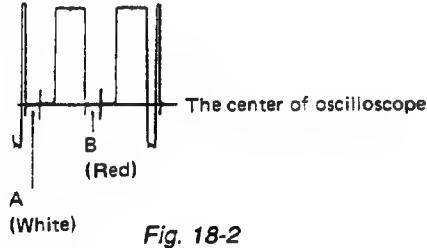


18-2. BT Board Total Adjustment

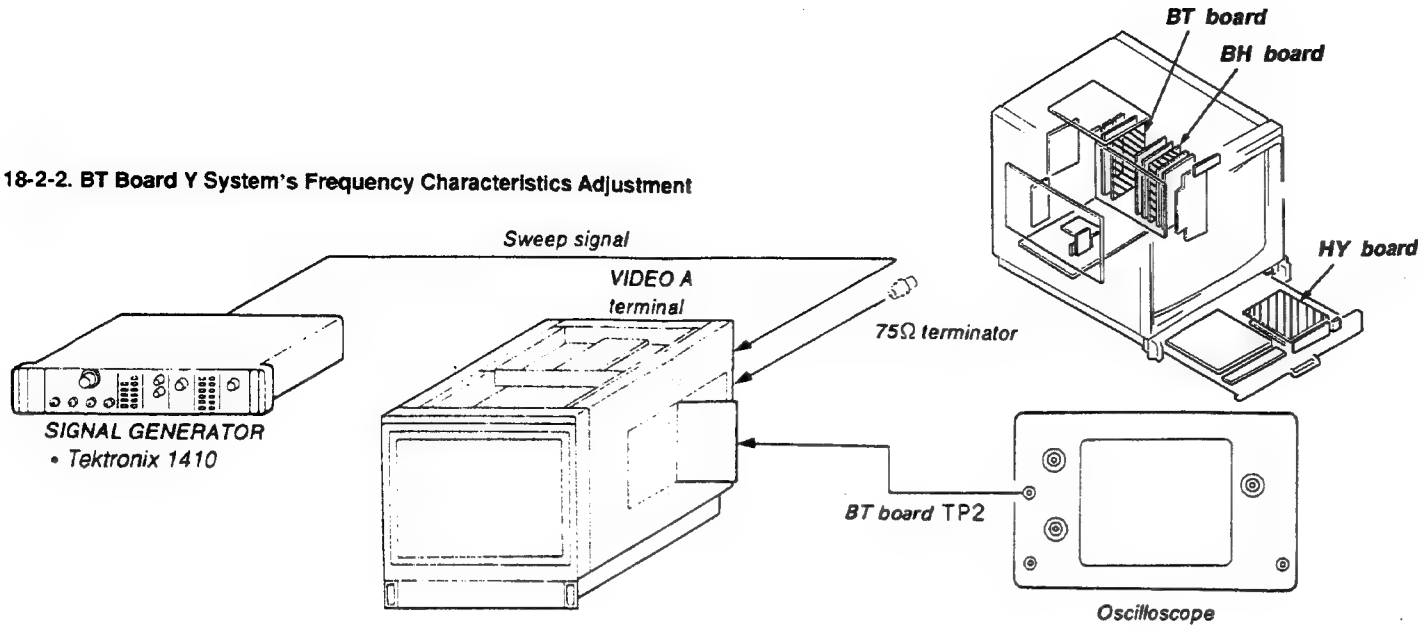
18-2-1. BT Board Luminance Level Adjustment



1. Feed a color bar signal to VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 (R OUT) on the BH board. (DC 0.1 V/div:H)
4. Turn the POSITION control of the oscilloscope until the portion A (white) of Fig. 18-2 is set to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion A (white) of Fig. 18-2 to the center of the oscilloscope using RV3 (luminance level) on the BT board.
8. Set the PAL S/SECAM F/COMB S button to the OFF.
9. Set the portion A (white) of Fig. 18-2 to the center of the oscilloscope using RV9 (IH luminance level) on the BT board.



18-2-2. BT Board Y System's Frequency Characteristics Adjustment



1. Feed a sweep signal to the VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the COMB position.
3. Connect the oscilloscope to TP2 on the BT board. (AC 0.1 V/div:V)
4. Set CV5 to the position as shown in Fig. 18-3.
5. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
6. Adjust the frequency characteristics until it is made flat using CV1 (Y FREQ) on the BT board. If it cannot be properly adjusted by using CV1, use CV5 (Y FREQ).
7. Set the PAL S/SECAM F/COMB S button to the OFF.
8. Adjust the frequency characteristics until it is made flat using CV2 (1H Y FREQ) on the BT board.
9. Set CV3 (CLK PHASE) and CV4 (CLK PHASE) on the BT board to the position as shown in Fig. 18-4.
10. Adjust the clock phase until it becomes just as shown in Fig. 18-5 using CV3.
11. If it cannot be adjusted with CV3, adjust with CV4 by returning CV3 to the position of Fig. 18-4.

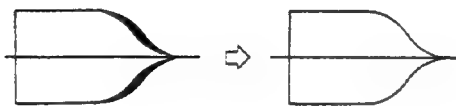
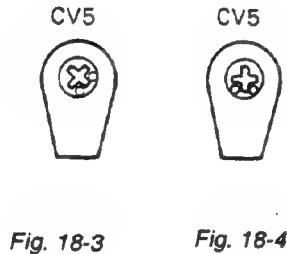
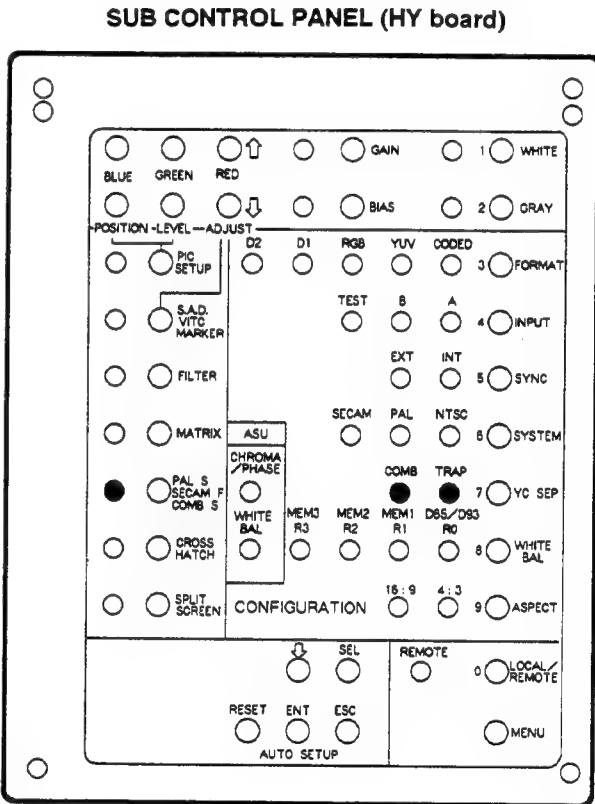
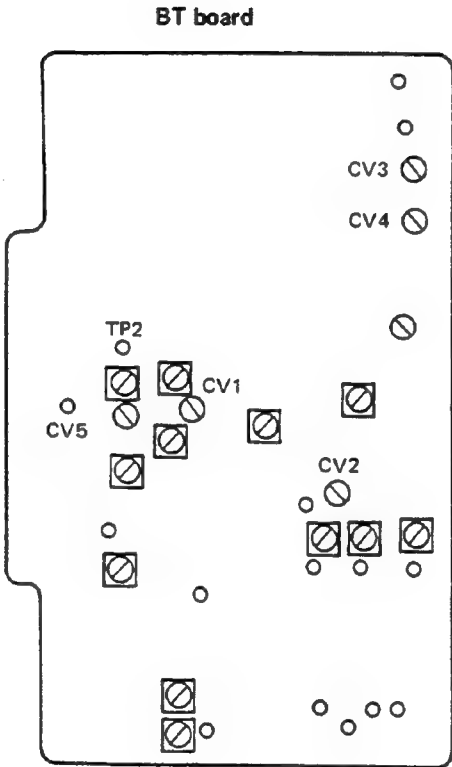
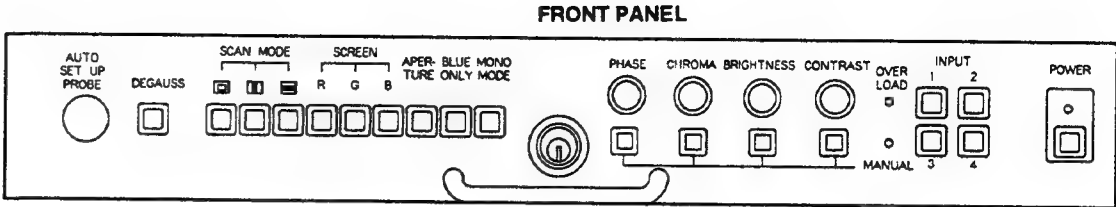
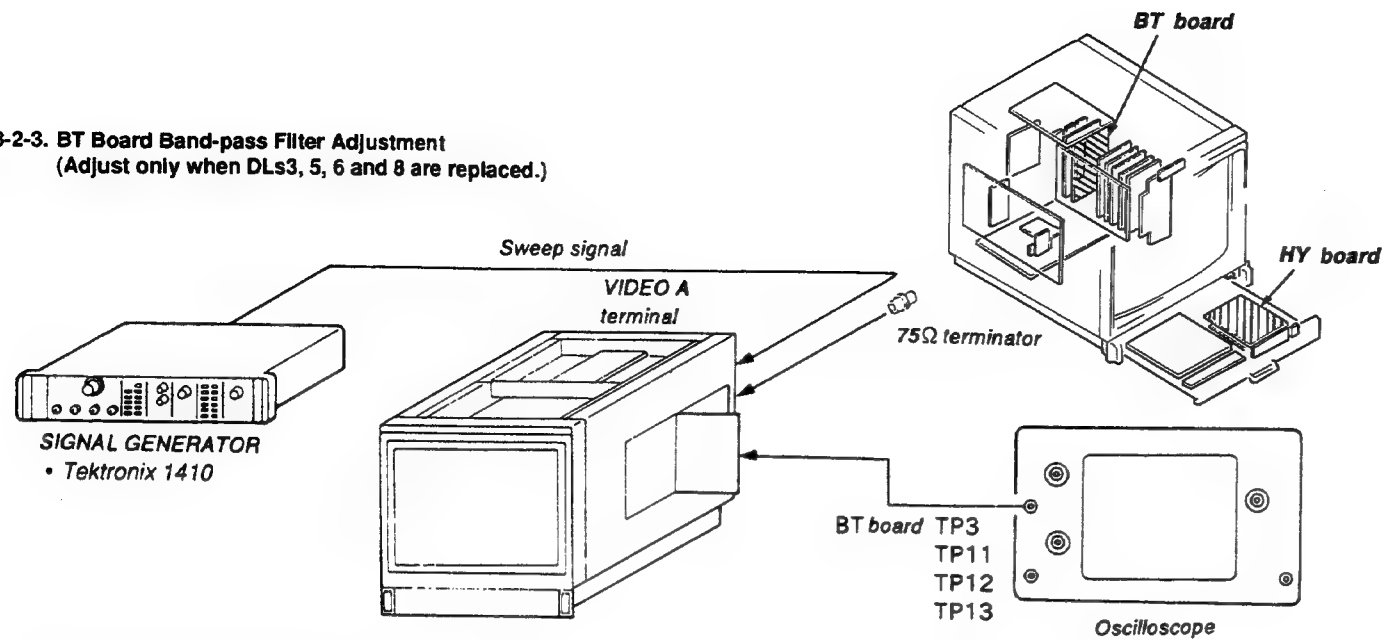


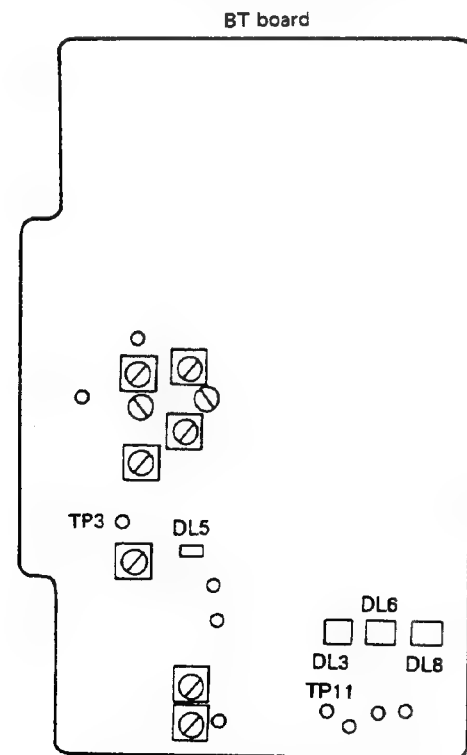
Fig. 18-5



18-2-3. BT Board Band-pass Filter Adjustment (Adjust only when DL3, 5, 6 and 8 are replaced.)



1. Feed a sweep signal to the VIDEO A INPUT terminal of this set.
2. Set the PAL S/SECAM F/COMB S button on the front panel to the ON.
3. Connect the oscilloscope to TP11.
4. Adjust the frequency characteristics using DL3 on the BT board so that the waveform becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.
5. Connect the oscilloscope to TP12.
6. Adjust the frequency characteristics using DL6 on the BT board so that the waveform becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.
7. Connect the oscilloscope to TP13.
8. Adjust the frequency characteristics using DL8 on the BT board so that the waveforms becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.
9. Connect the oscilloscope to TP3.
10. Adjust the frequency characteristics using DL5 on the BT board so that the waveforms becomes symmetrical as shown in Fig. 18-5 with 3.58 MHz as center frequency.



4-53

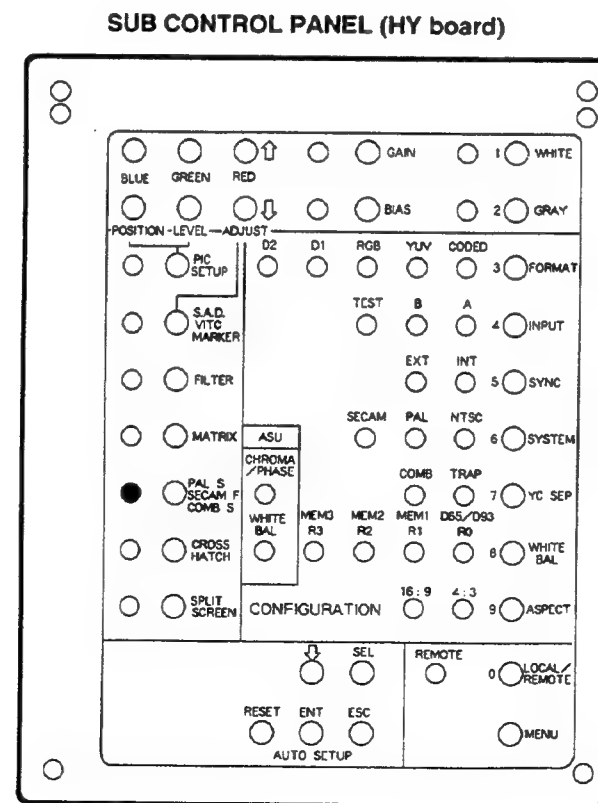
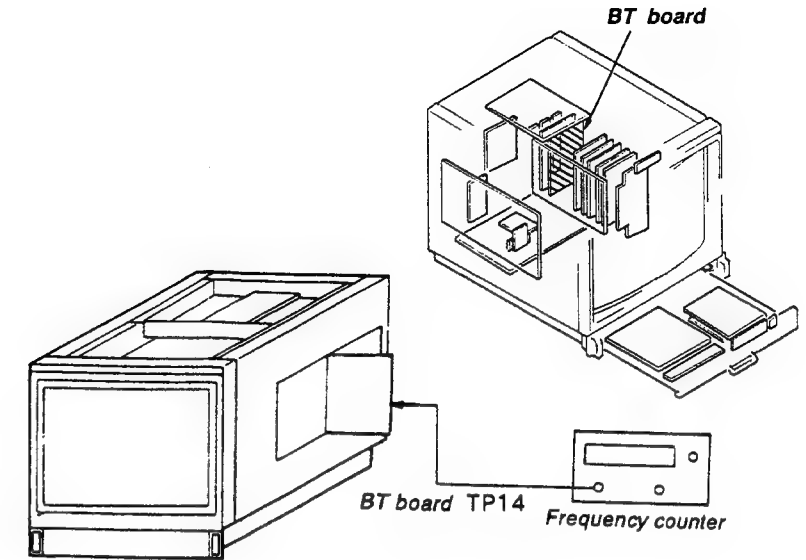
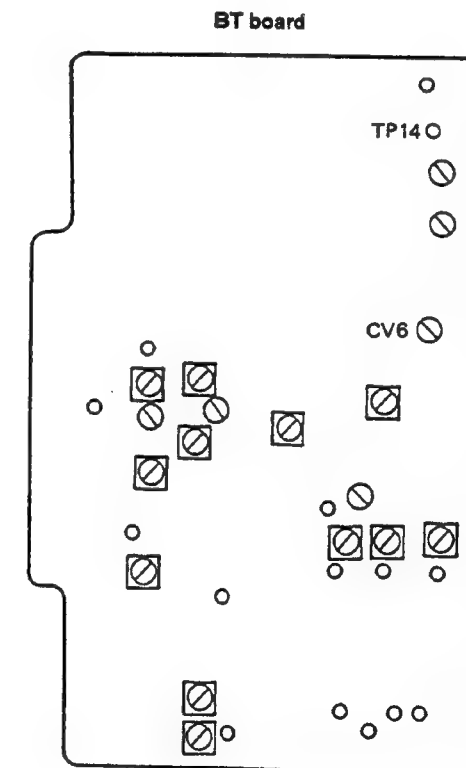


Fig. 18-6

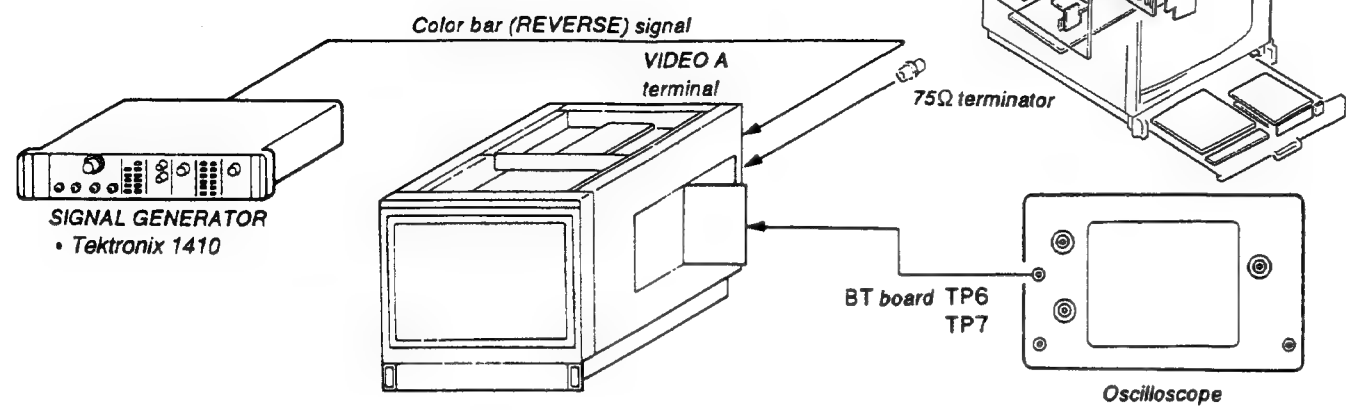
18-2-4. BT Board Clock to Adjustment



1. Connect the frequency counter to TP14.
2. Make adjustment as shown below using CV6 (CLK FREQ) on the BT board.
 - $f_0 = 21.477 \text{ MHz}$



18-2-5. BT Board 0H/1H, 1H/2H MIX Adjustment



1. Feed a color bar signal (REVERSE) to the VIDEO A INPUT terminal of this set.
2. Connect the oscilloscope to TP6 to magnify the signal inverted area.
3. Turn RV5 (0H/1H MIX LEVEL) and RV10 (0H/1H MIX PHASE) on the BT board until the portion shown in Fig. 18-7 is reduced to a minimum.
4. Connect the oscilloscope to TP7.
5. Turn RV12 (1H/2H MIX PHASE) and RV11 (1H/2H MIX LEVEL) on the BT board until the portion shown in Fig. 18-7 is reduced to a minimum.

Enlarged view of inverted signal section

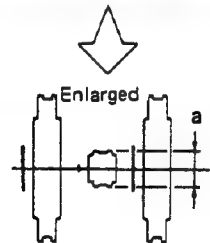
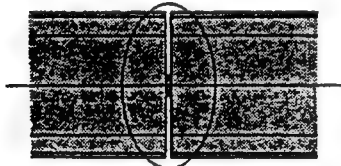
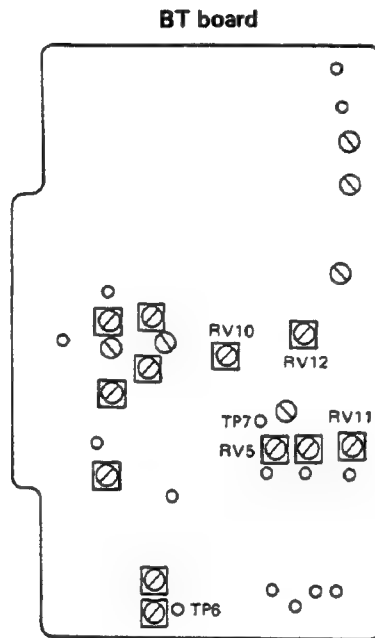
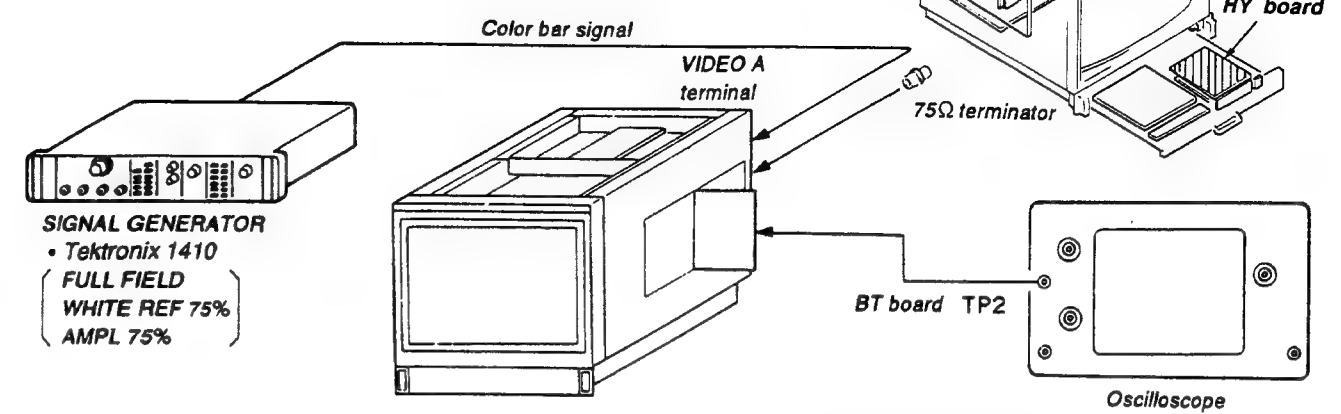


Fig. 18-7



18-2-6. BT Board Y/C MIX Adjustment



1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Connect the oscilloscope to TP2 on the BT board.
3. Set the PAL S/SECAM F/COMB S button on the sub control panel to the OFF.
4. Turn RV1 (Y/C MIX PHASE) and RV2 (Y/C MIX LEVEL) on the BT board so that the sub-carrier level is reduced to a minimum as shown in Fig. 18-8.

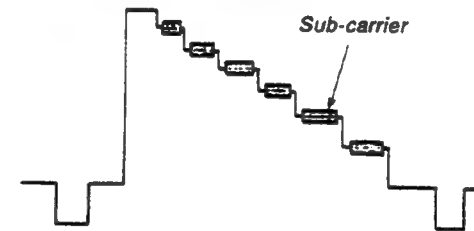
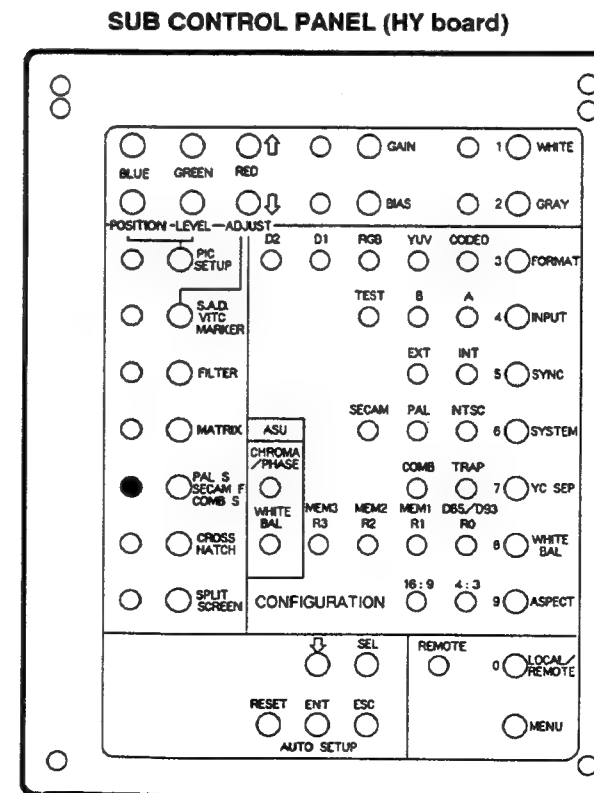
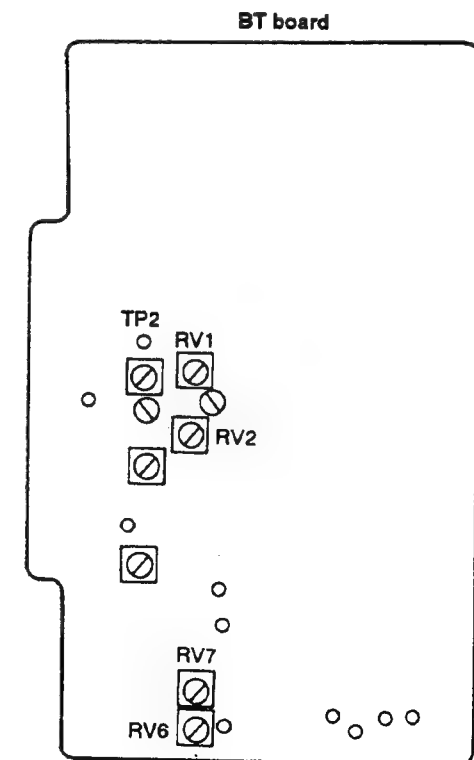


Fig. 18-8

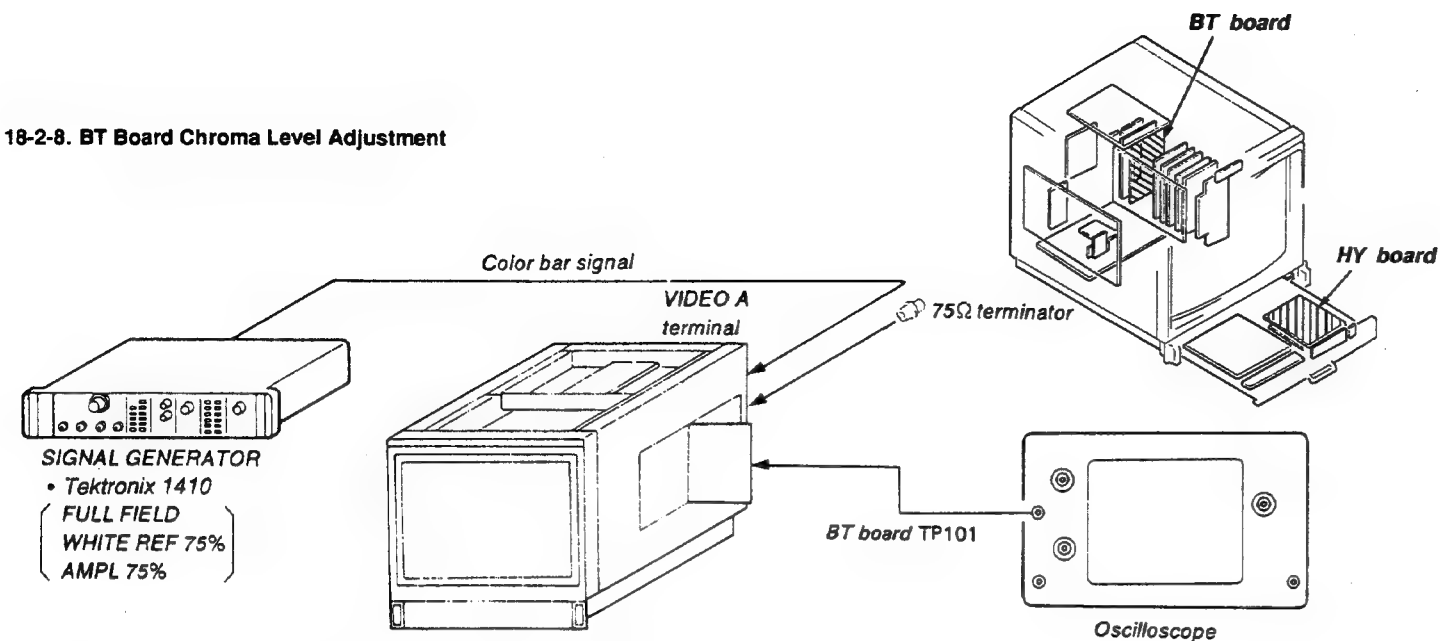


18-2-7. S COMB Adjustment

1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
3. Connect the oscilloscope to TP2 on the BT board.
4. Turn RV6 (S COMB C Level) and RV7 (S COMB C PHASE) on the BT board so that the sub-carrier level is reduced to a minimum as shown in Fig. 18-8.



18-2-8. BT Board Chroma Level Adjustment



1. Feed a color bar signal to the VIDEO A INPUT terminal of this set.
2. Set the YC SEP switch on the sub control panel to the TRAP position.
3. Connect the oscilloscope to TP101 on the BT board.
(DC 0.1 V/div: H)
4. Turn the POSITION control of the oscilloscope to set the portion B (red) of Fig. 18-9 to the center of the oscilloscope.
5. Set the YC SEP button to the COMB position.
6. Set the PAL S/SECAM F/COMB S button on the sub control panel to the ON.
7. Set the portion B (red) of Fig. 18-9 to the center of the oscilloscope using RV8 (C OUTPUT LEVEL) on the BT board.

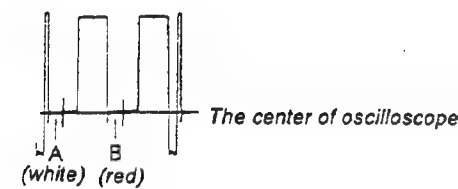
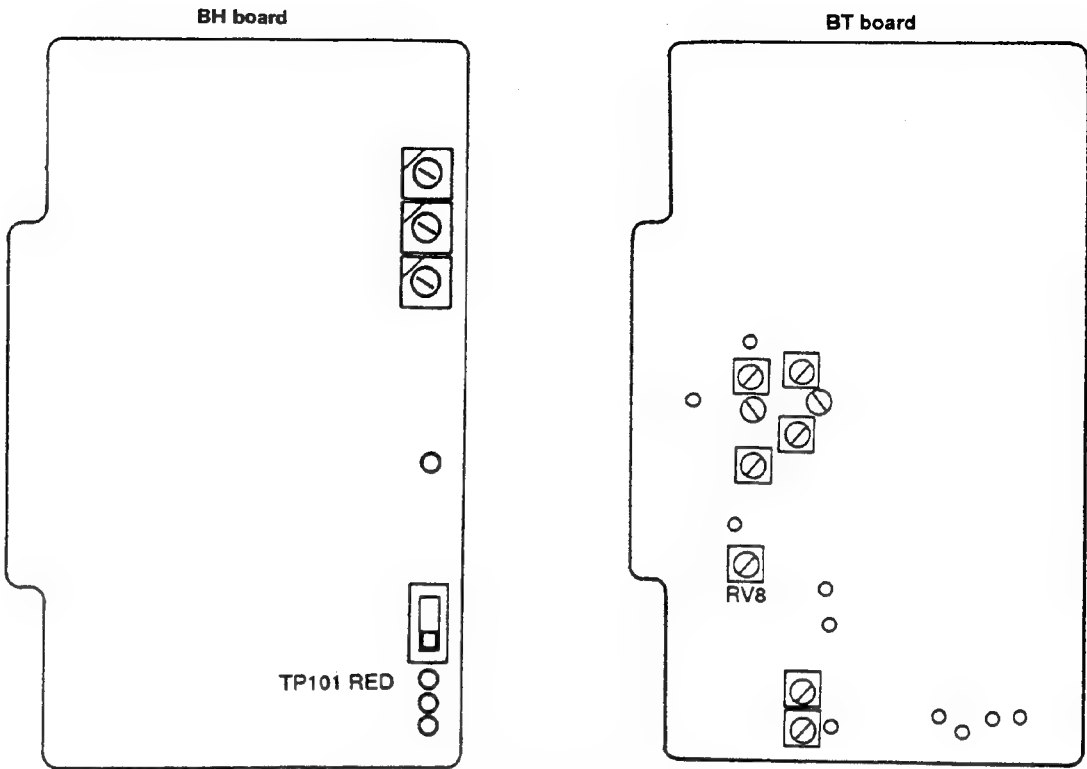
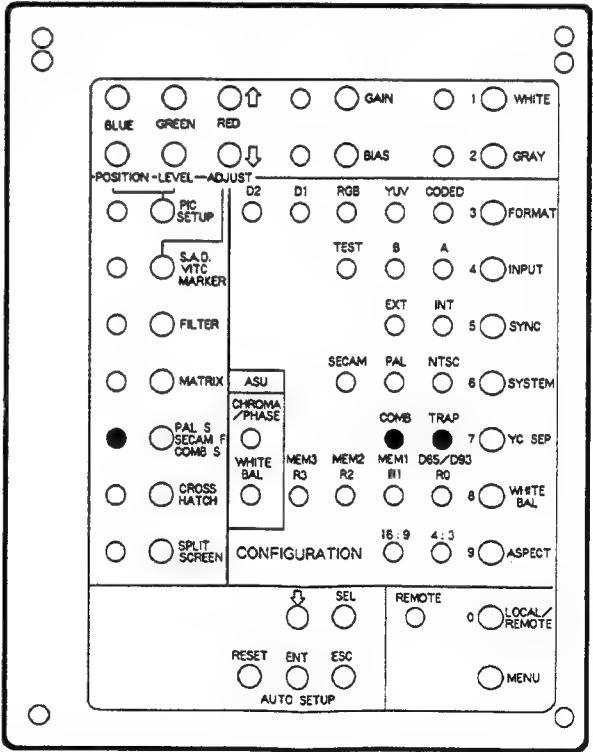


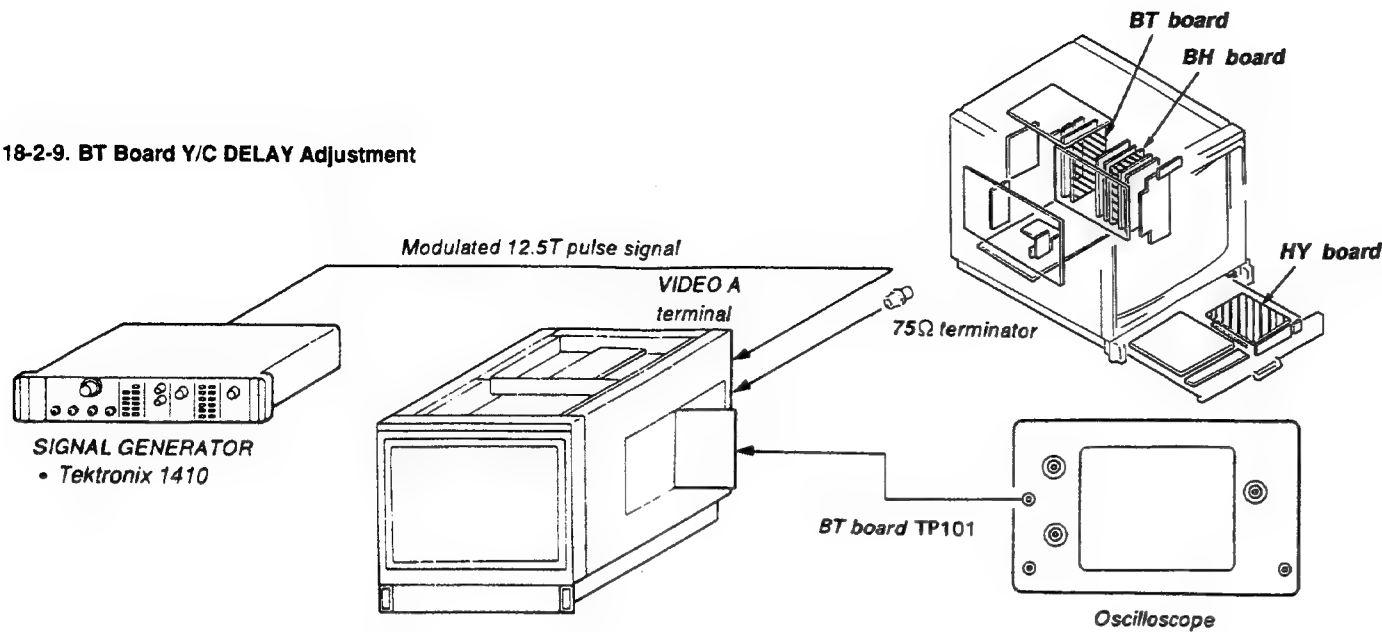
Fig. 18-9



SUB CONTROL PANEL (HY board)



18-2-9. BT Board Y/C DELAY Adjustment



1. Feed a 12.5T pulse signal to the VIDEO A terminal of this set.
2. Set the PAL S/SECAM F/COMB S button to the ON.
3. Connect the oscilloscope to TP101 on the BH board.
4. Turn the CHROMA MANUAL control (on the front panel) until the chroma signal is adjusted as shown in Fig. 18-10.
5. After adjustment, turn RV4 (Y/C DELAY) on the BT board until the waveform is symmetrical.

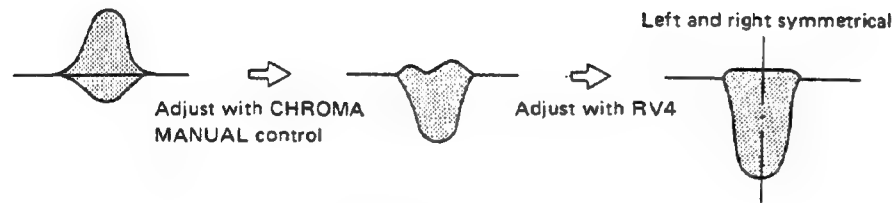
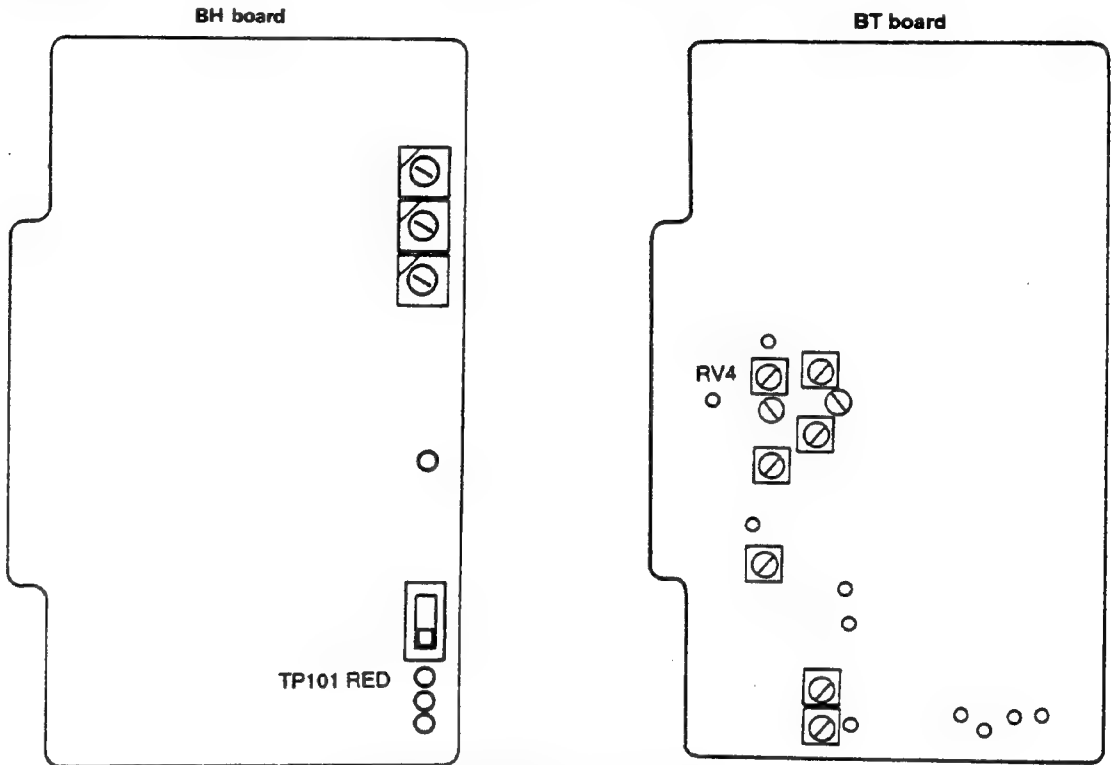
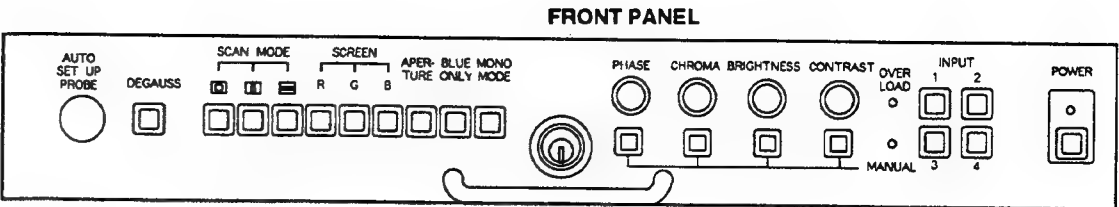
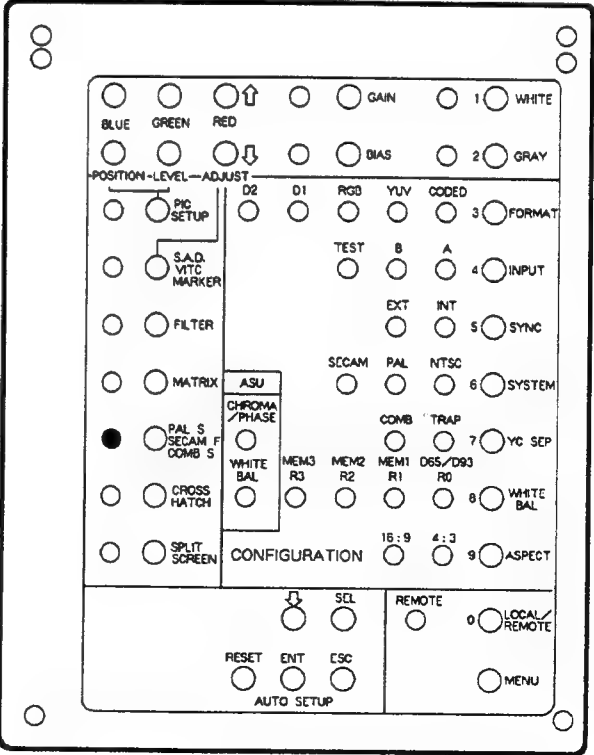


Fig. 18-10



SUB CONTROL PANEL (HY board)



19. BD (PAL) BOARD BPF ADJUSTMENT (BVM-2016P ONLY)

The diagram illustrates the setup for adjusting the Band Pass Filter (BPF) on the BD (PAL) board of the BVM-2016P monitor. A Tektronix 1411 (PAL) Generator provides a Sweep signal (10MHz) to the VIDEO A terminal. A 75Ω terminator is also connected to the VIDEO A terminal. The monitor's rear panel shows the BD board, BG board, and HY board. An oscilloscope is connected to the BG board TP 2 terminal for signal monitoring.

-

7 div.

-

$A = B$

Diagram of the front panel controls for the Sony CCD-1000 video camera. The controls are organized into several sections:

- Top Section:** Includes buttons for BLUE, GREEN, RED, GAIN, 1 WHITE, 2 GRAY, and POSITION-LEVEL-ADJUST (with up/down arrows).
- Second Section:** Includes buttons for D2, D1, RGB, YUV, CODED, 3 FORMAT, TEST, B, A, 4 INPUT, EXT, INT, 5 SYNC, and FILTER.
- Third Section:** Includes buttons for MATRIX, ASU, CHROMA/PHASE, PAL S SECAM F COMB S, WHITE BAL, MEM3 R3, MEM2 R2, MEM1 R1, D65/D63 R0, 6 SYSTEM, 7 YC SEP, 8 WHITE BAL, and CROSS MATCH.
- Fourth Section:** Includes buttons for SPLIT SCREEN, CONFIGURATION, 16:9, 4:3, 9 ASPECT, and RESET.
- Bottom Section:** Includes buttons for SEL, REMOTE, LOCAL/REMOTE, MENU, and AUTO SETUP.

20. BD (PAL) BOARD PHASE SHIFT ADJUSTMENT (BVM-2016P ONLY)

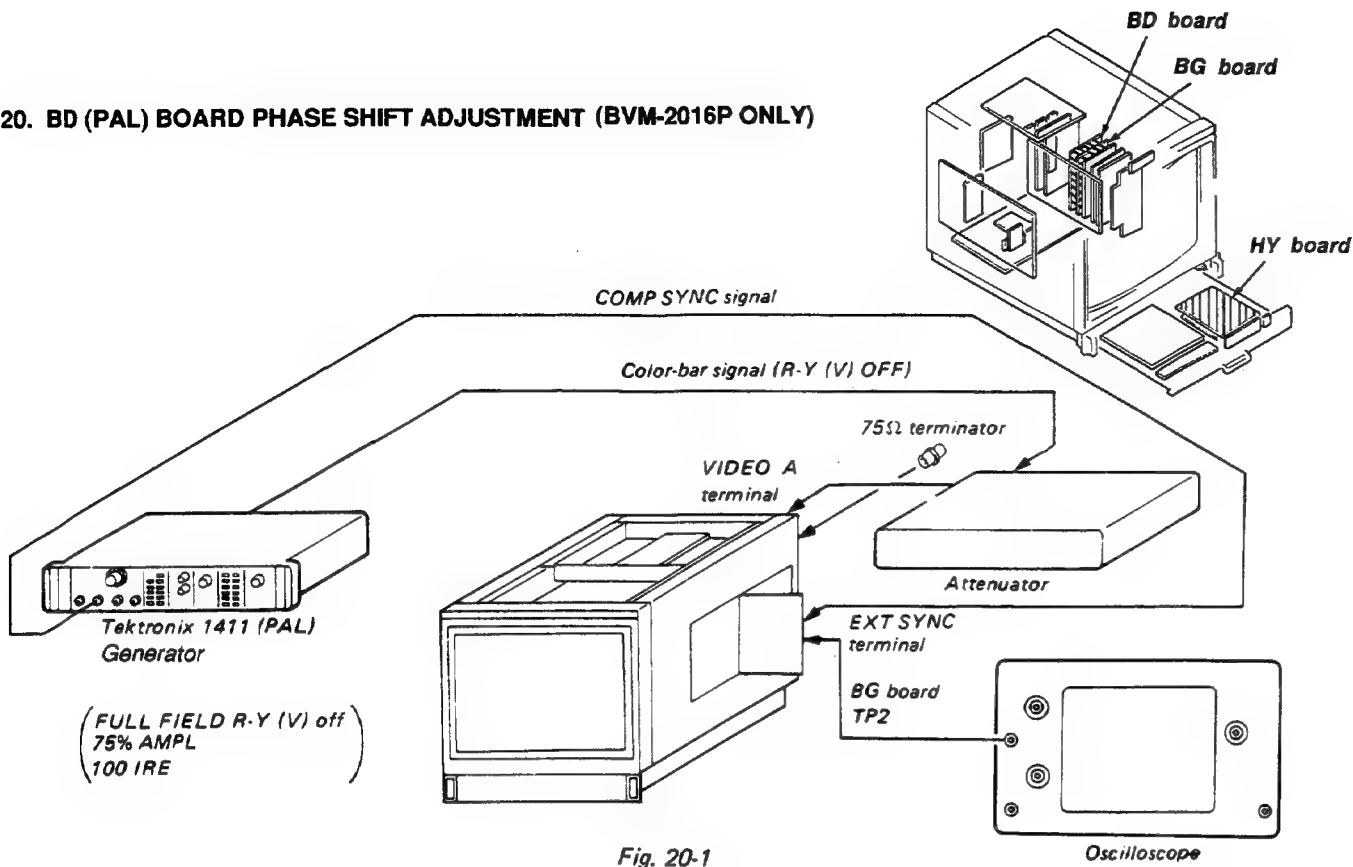


Fig. 20-1

- SYNC button (SUB CONTROL PANEL)..... EXT
- PALS/SECAM F/COMB S button (SUB CONTROL PANEL)..... ON
- RV2 (BD BOARD).....MECHANICAL CENTER
- CV1 (BD BOARD).....MECHANICAL CENTER
- CV2 (BD BOARD).....MECHANICAL CENTER

1. Complete the connection as shown in Fig. 20-1.
2. Connect an oscilloscope to the TP2 on the BG board.
3. Make the waveform flat with the PHASE control of front panel (R) as shown in Fig. 20-2.

4. Attenuate the signal by 10dB by using attenuator.
5. Adjust RV2 on the BD board so that the output waveform becomes flat as shown in Fig. 20-2.
6. Restore the attenuator to 0dB.
7. Repeat the steps 3 to 5.

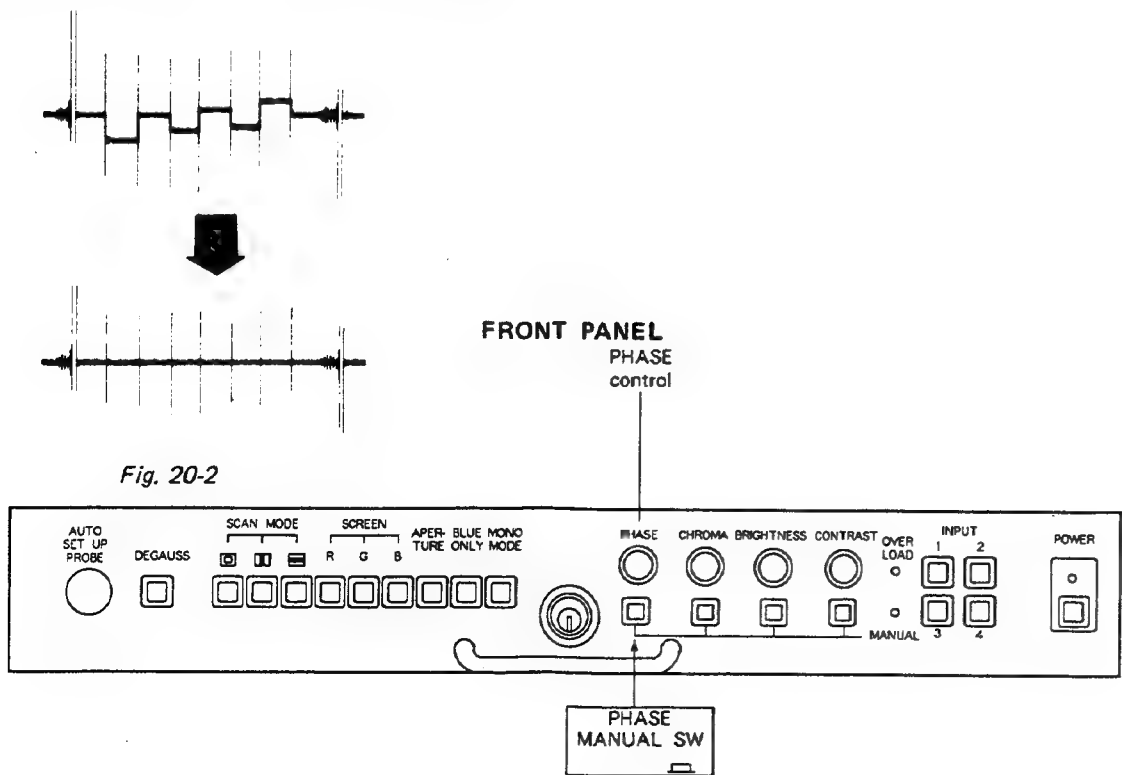
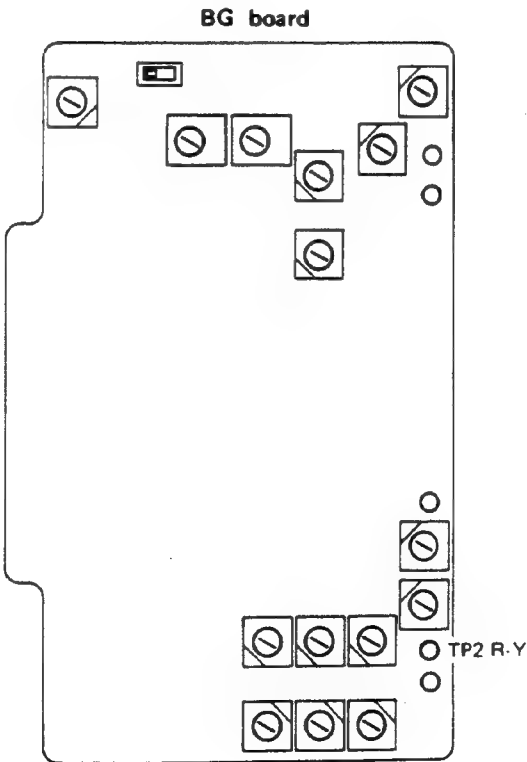
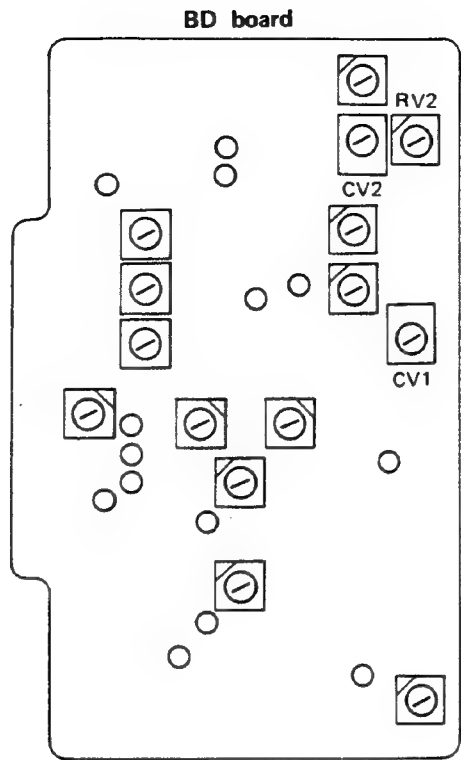
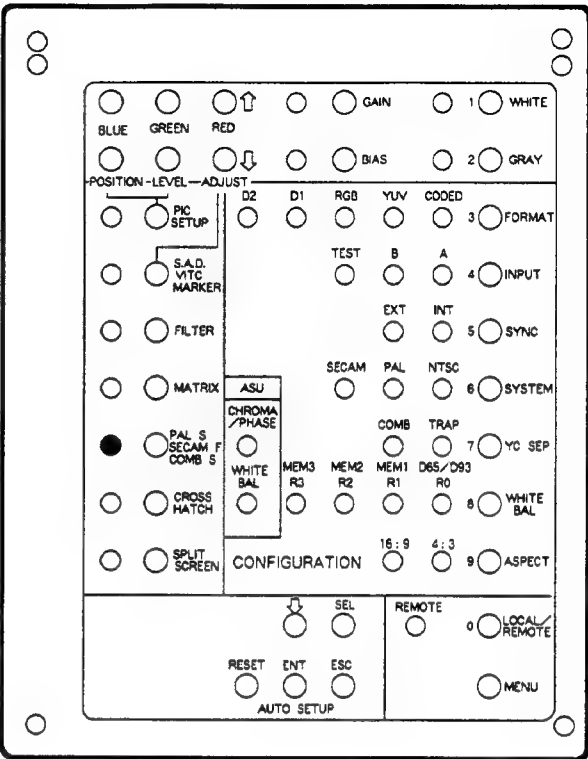


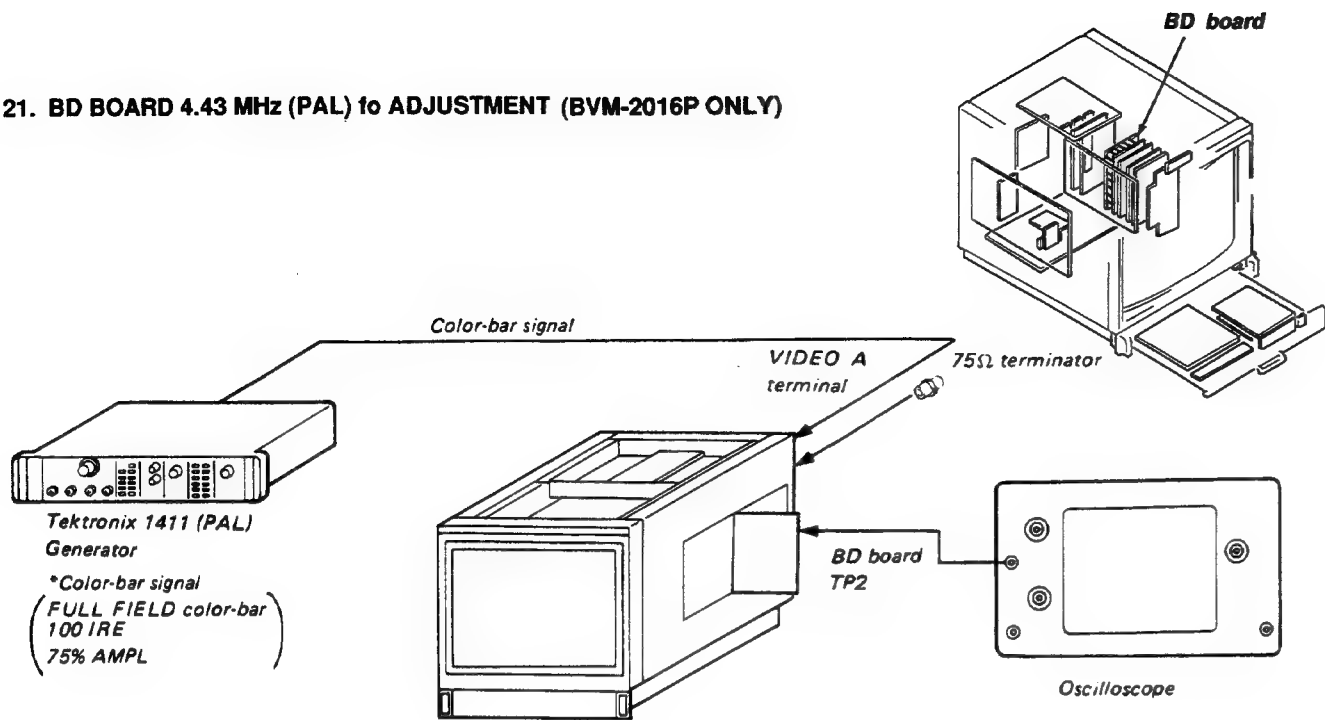
Fig. 20-2



SUB CONTROL PANEL (HY board)



21. BD BOARD 4.43 MHz (PAL) to ADJUSTMENT (BVM-2016P ONLY)



1. Input color-bar signal to the VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP2 of BD board.
3. Short-circuit between TP11, 12 of BD board with a jumper wire.
4. Adjust CV2 of BD board so that the output waveform is shifted slowly as shown in Fig. 21-1.
5. Turn off the power of this monitor, and disconnect TP11, 12 of BD board.

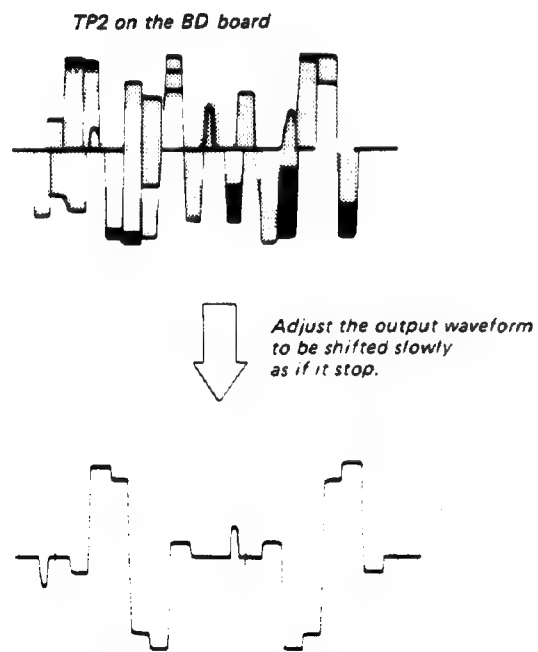
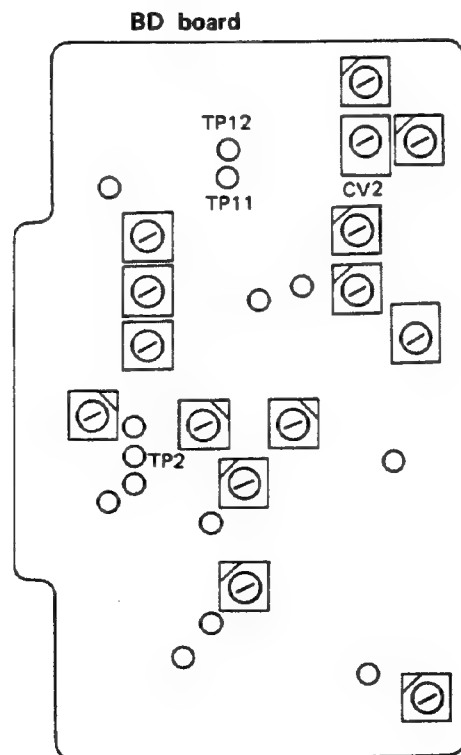


Fig. 21-1



22. BD BOARD (PAL) COLOR DIFFERENCE PHASE ADJUSTMENT (BVM-2016P ONLY)

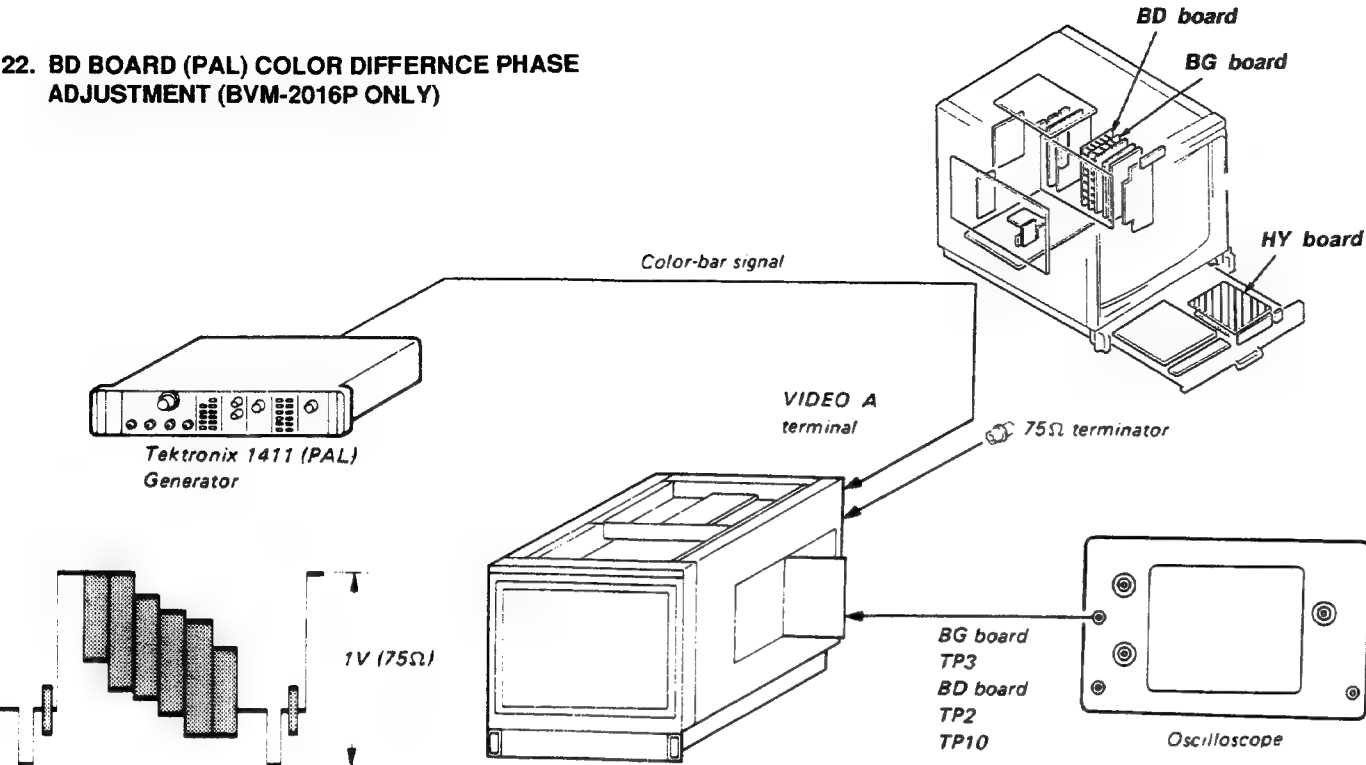


Fig. 22-1

Quad Adjustment

5. Connect the oscilloscope probe to TP on the BD board. Turn on the U signal of the signal generator, and turn off the V (R-Y) signal. Then adjust CV1 on the BD board so that the output waveform is flat. (See Fig. 22-3.)
6. Repeat the steps 3 to 6.

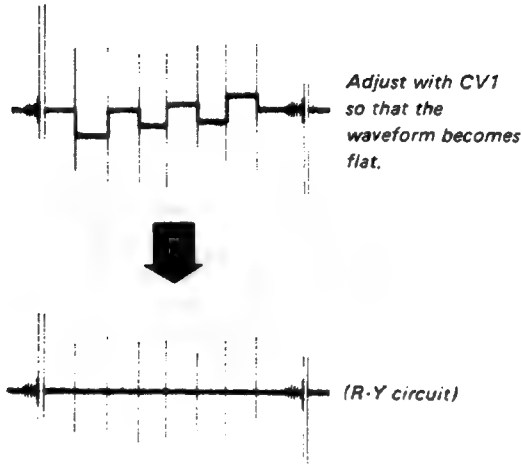
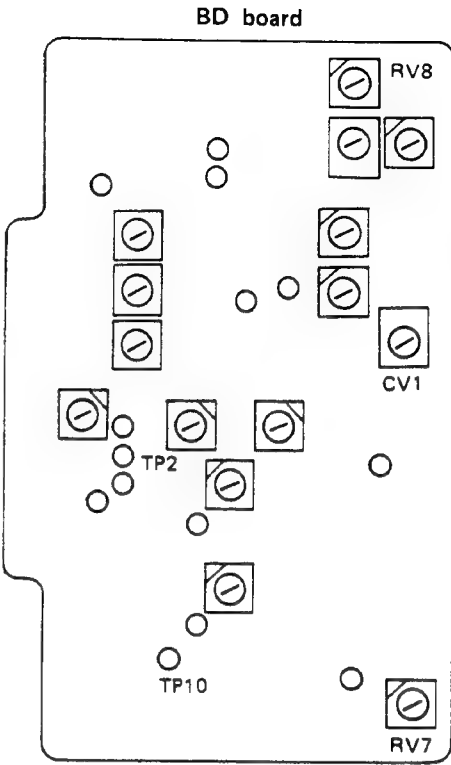
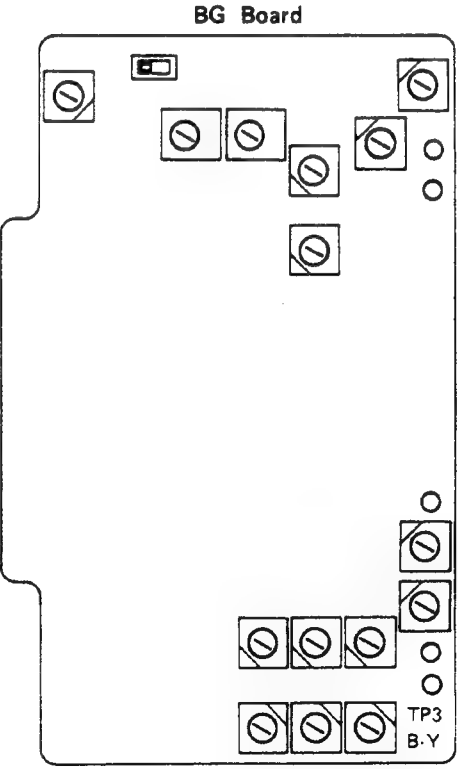


Fig. 22-3



PAL D Phase Adjustment

7. Set the PAL S/SECAM F/COMB S button to the OFF and turn on the V signal of the signal generator, and turn off U signal.
8. Connect the oscilloscope probe to TP10 on the BD board.
9. Adjust RV7 on the BD board so that the output waveform is flat. (See Fig. 22-2.)
10. Finally, perform the adjustments of 3 and 4 by directly mounting the BD board to the set, without using the extension board.



1. Complete the connections as shown in Fig. 22-1.
2. Turn on the power of this monitor. Set the INPUT switch to the 1 position, the SYNC switch to the INT position, and the PAL S/SECAM F/COMB S button to the ON.

B-Y System Adjustment

3. Connect the oscilloscope probe to TP3 on the BG board, and turn off the U (B-Y) signal of the signal generator.
4. Set the oscilloscope sensitivity to 20mV/DIV, and adjust RV8 on the BD board so that the output waveform is flat. (See Fig. 22-2.)

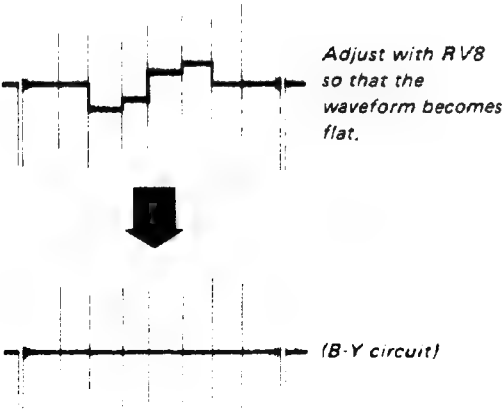
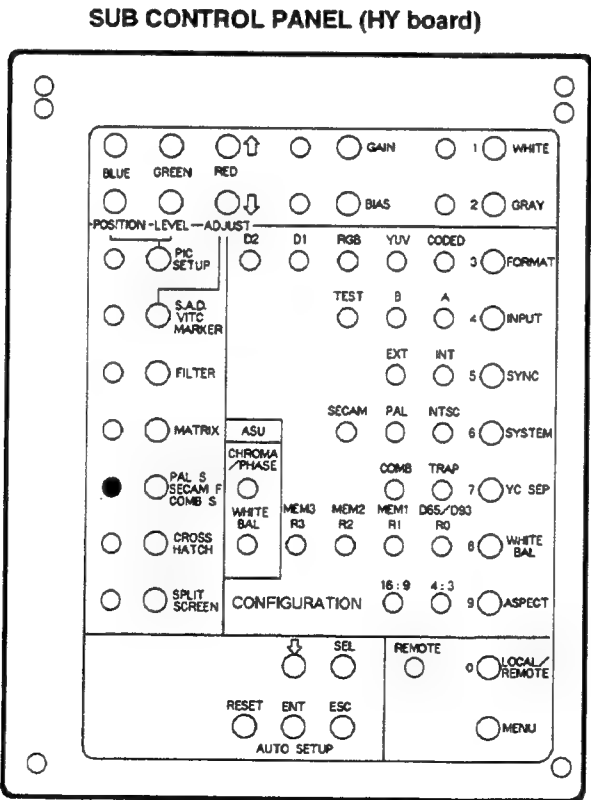


Fig. 22-2



The diagram illustrates the test setup for the color bar signal. A Tektronix 1411 (PAL) Generator is connected to the VIDEO A terminal of the device under test. The generator is set to output a color bar signal with the following specifications:

- *Color-bar signal
- (FULL FIELD color-bar)
- 100 IRE
- 75% AMPL


The device under test is shown with its internal components, including the VIDEO A terminal, a 75Ω terminator, and the BH board (TP101, TP201, TP301). The HY board is also shown. An oscilloscope is connected to the BH board to monitor the signal.


-

Fig. 23-1

-

SUB CONTROL PANEL (HY board)

BLUE GREEN RED  GAIN 1 ☐ WHITE

POSITION-LEVEL-ADJUST  BIAS 2 ☐ GRAY

☐ PIC SETUP D2 D1 RGB YUV CODED 3 ☐ FORMAT

☐ S.A.D. VITC MARKER TEST B A 4 ☐ INPUT

☐ FILTER EXT INT 5 ☐ SYNC

☐ MATRIX ASU SECAM PAL NTSC 6 ☐ SYSTEM


☒ PAL S ☐ SECAM F CHROMA / PHASE 7 ☐ YC SEP

☐ COMB S WHITE BAL MEM3 MEM2 MEM1 D65/D63 8 ☐ WHITE BAL

☐ CROSS HATCH R3 R2 R1 R0 9 ☐ ASPECT

☐ SPLIT SCREEN 16:9 4:3



CONFIGURATION ☐ ☐

 SEL REMOTE 0 ☐ LOCAL / REMOTE

RESET ENT ESC ☐ MENU

AUTO SETUP

-

RV4   _____



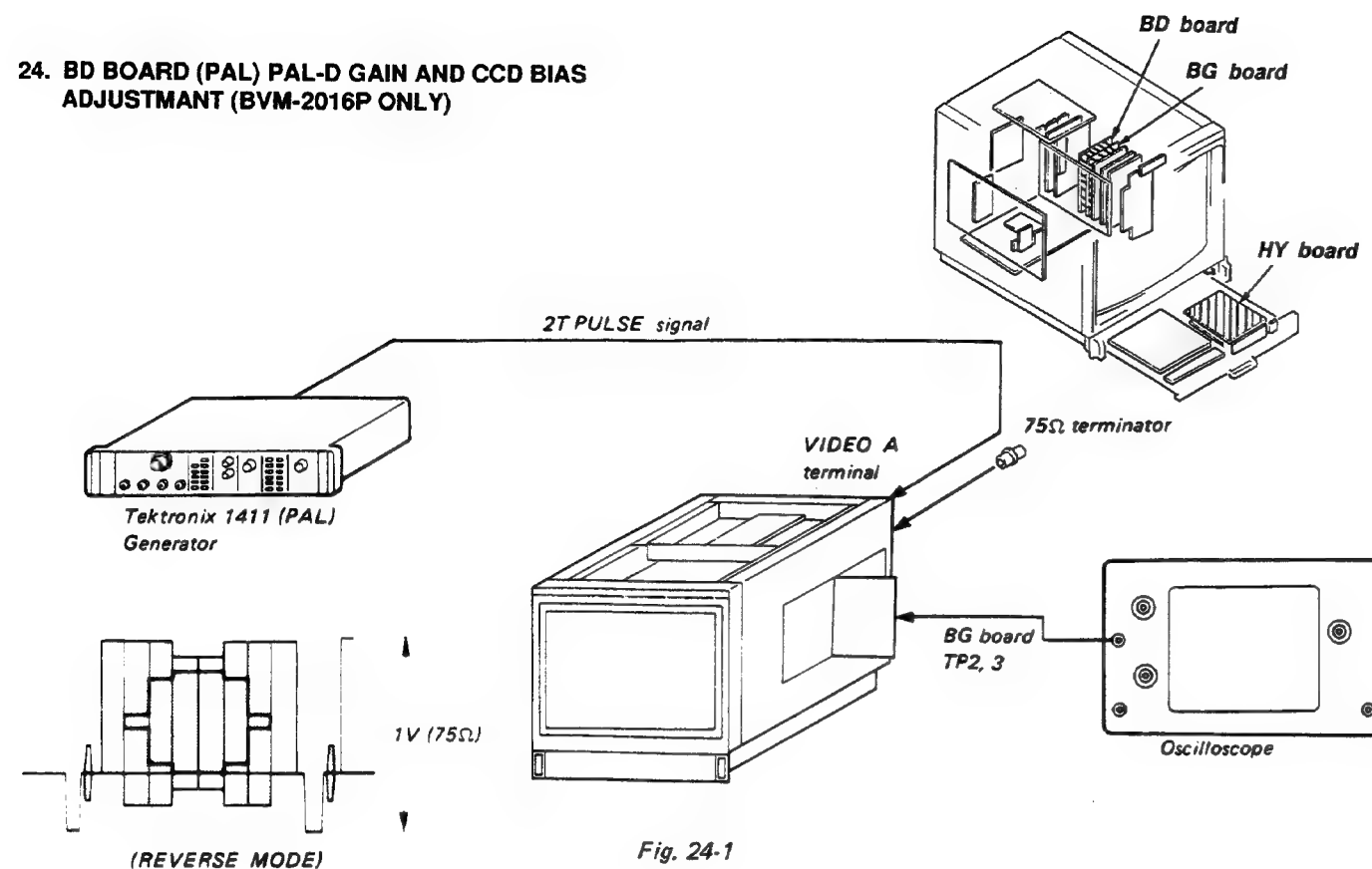
RV5   _____

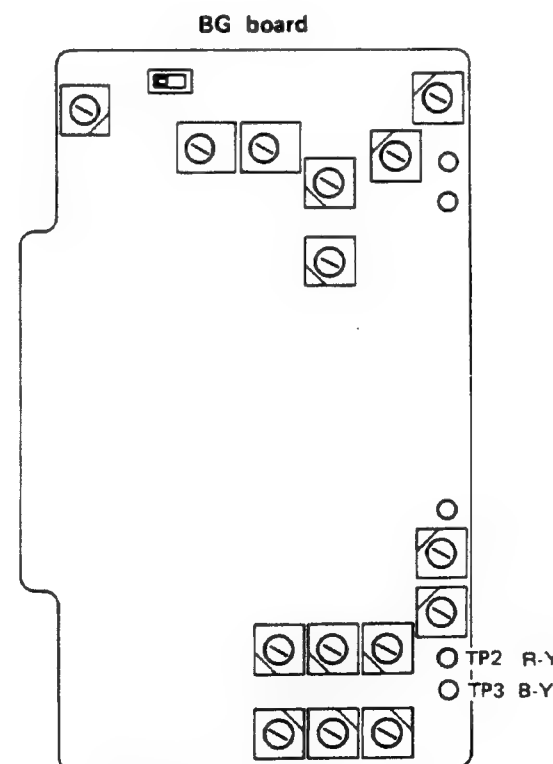
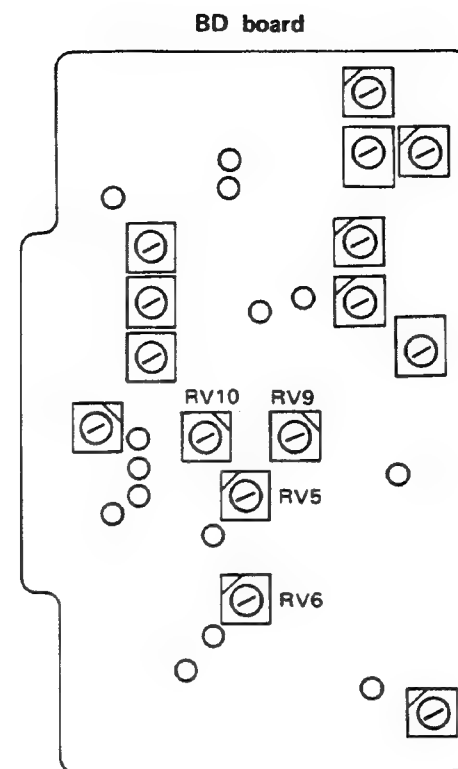
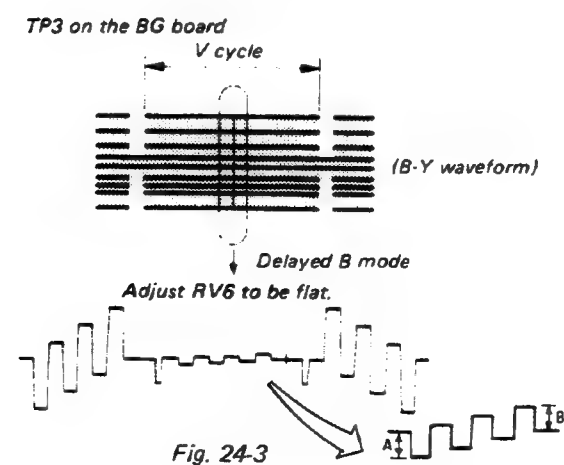
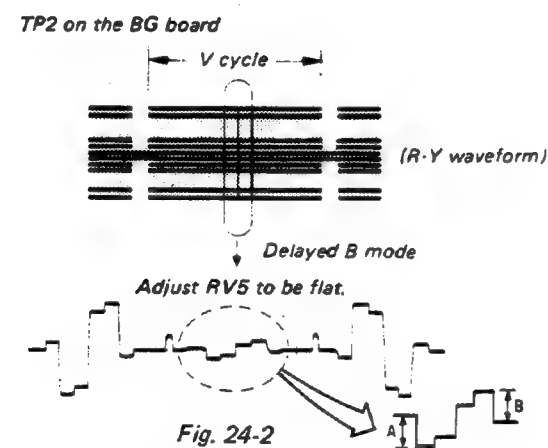
Fig. 23-3

24. BD BOARD (PAL) PAL-D GAIN AND CCD BIAS ADJUSTMANT (BVM-2016P ONLY)

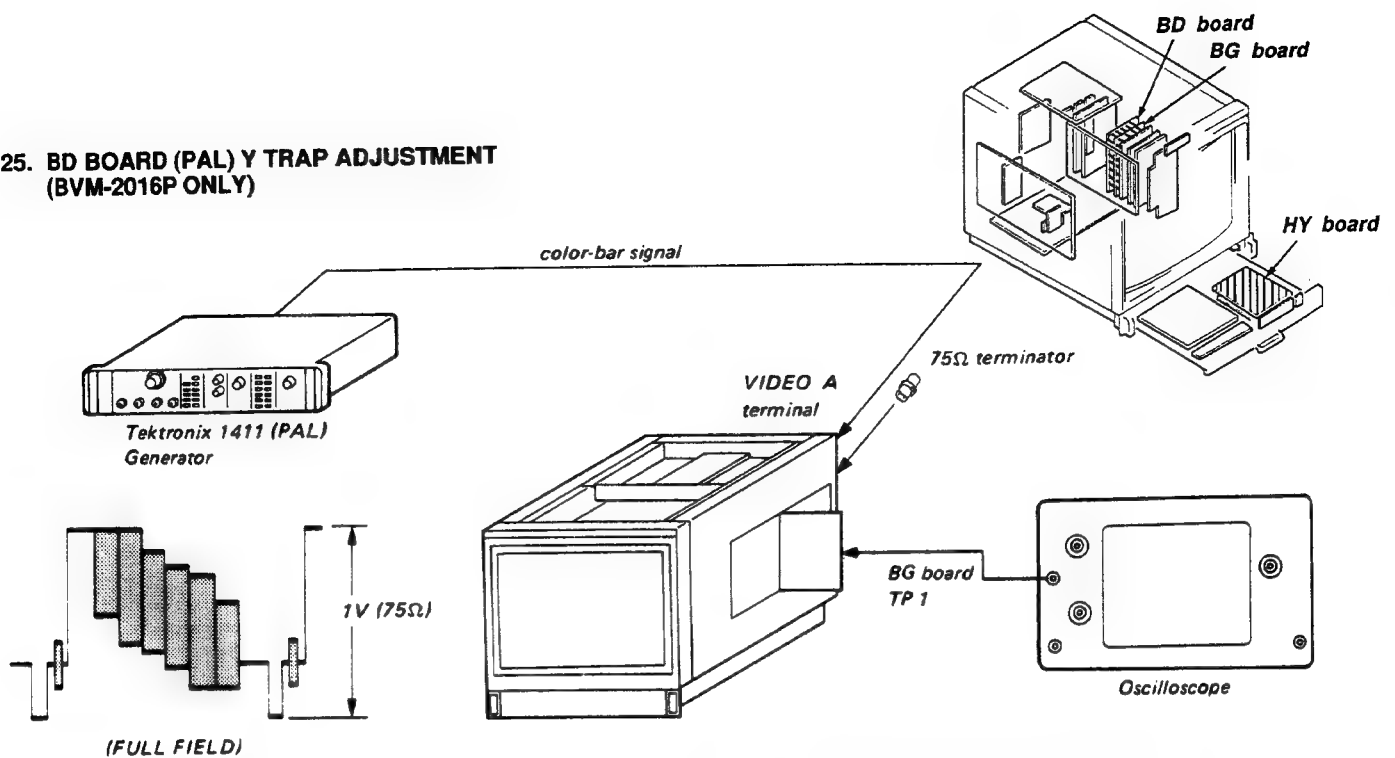


• PAL S/SECAM F/COMB S button
(SUB CONTROL PANEL) OFF

1. Complete the connection as shown in Fig. 24-1.
Turn on the power of this monitor. Set the INPUT switch to the 1 position, and the SYNC switch to the INT position.
2. Connect the oscilloscope probe to TP2 on the BG board.
3. Turn RV5 and RV6 on the BD board fully clockwise.
4. By observing the waveform shown in Fig. 24-2, adjust RV9 on the BD board so that it becomes A=B.
5. Adjust RV5 on the BD board so that the waveform shown in Fig. 24-2 becomes flat.
6. Connect the probe of the oscilloscope to TP3 on the BG board and observe the section shown in Fig. 24-3.
7. Adjust RV10 on the BD board so that the waveform of the oscilloscope becomes A=B.
8. Adjust RV6 on the BD board so that the waveform shown in Fig. 24-3 becomes flat.



25. BD BOARD (PAL) Y TRAP ADJUSTMENT (BVM-2016P ONLY)



1. Input color-bar signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L1 of BD board so that 4.43 MHz (PAL) subcarrier is minimum as shown in Fig. 25-1.

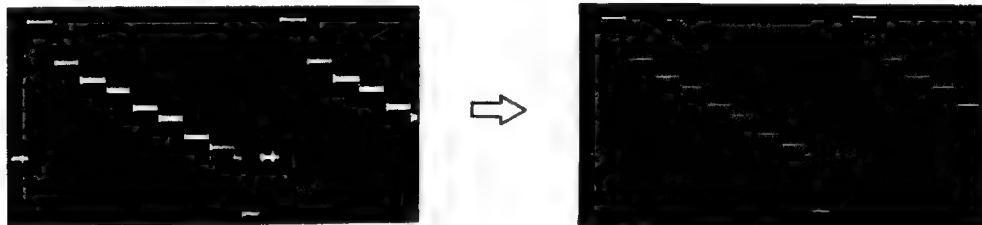
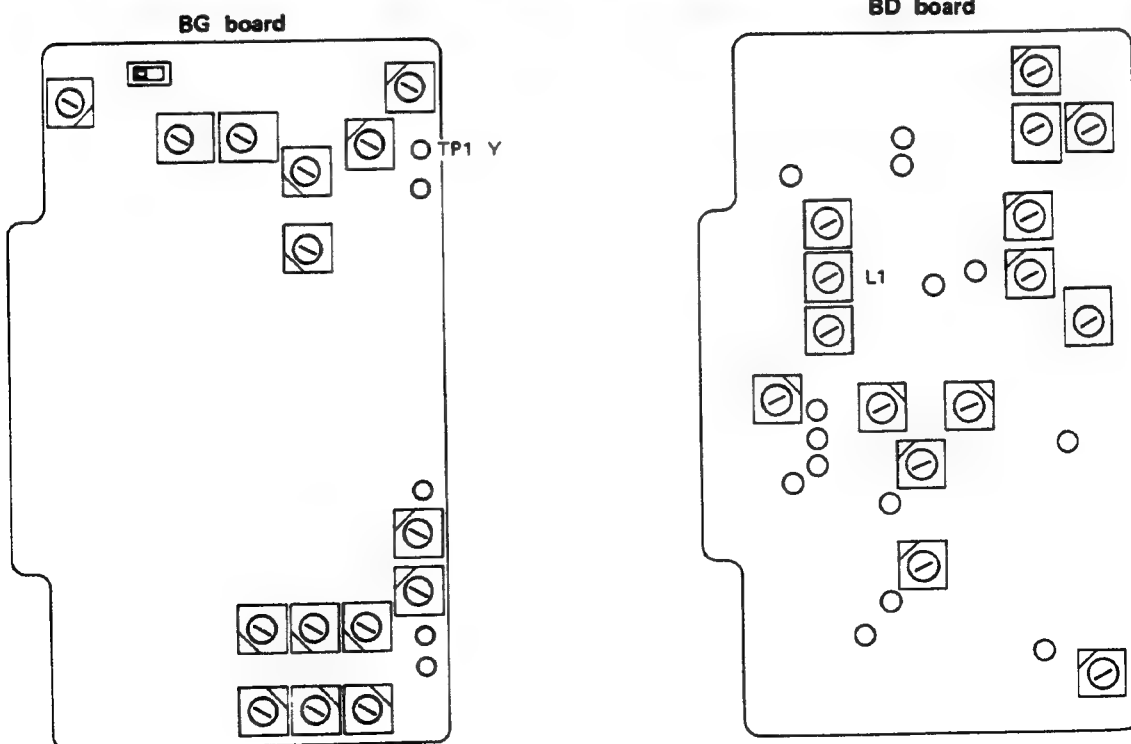
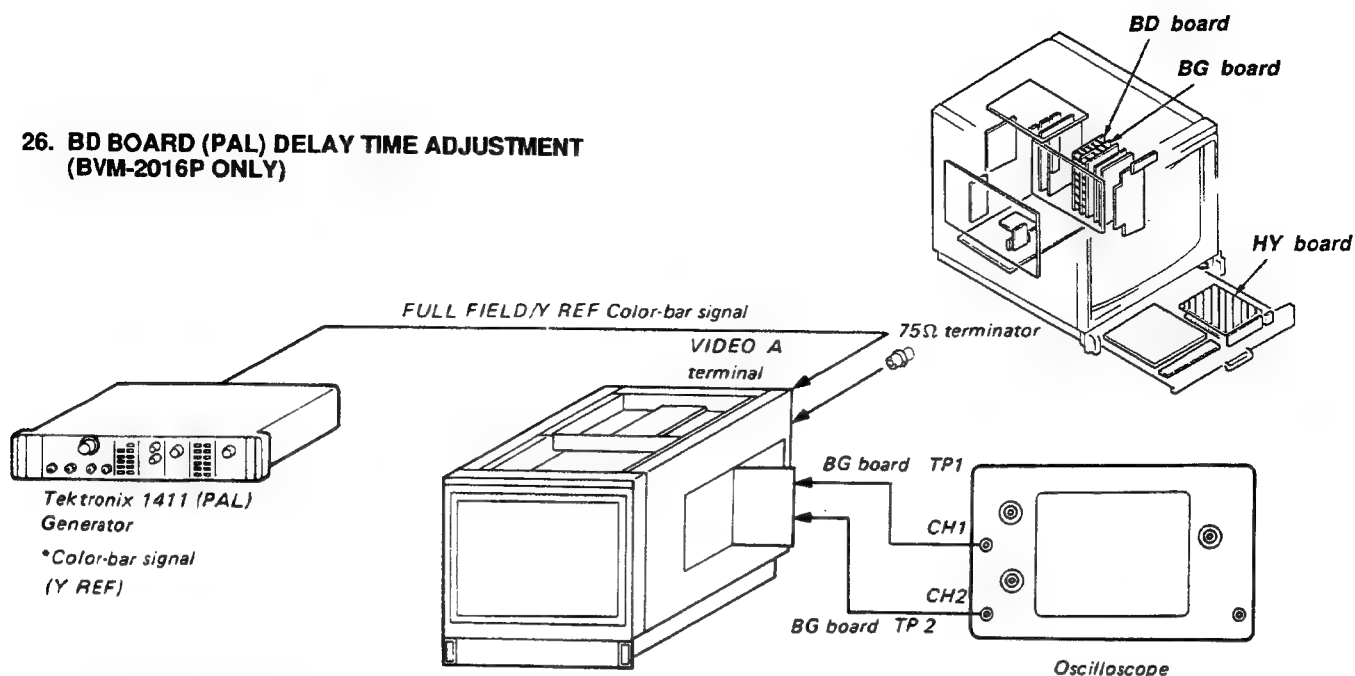


Fig. 25-1



26. BD BOARD (PAL) DELAY TIME ADJUSTMENT (BVM-2016P ONLY)



- PAL S/SECAM F/COMB S button (SUB CONTROL PANEL) ON

1. Input color-bar signal (FULL FIELD/Y REF) to the VIDEO A terminal of the set.

2. Connect an oscilloscope (CH-1 probe) to the TP1 of BG board and connect an oscilloscope (CH-2 probe) to the TP2 of BG board (VERT mode of the oscilloscope is CHOP).
3. Adjust RV1 of BD board so that output waveform as shown in Fig. 26-1.

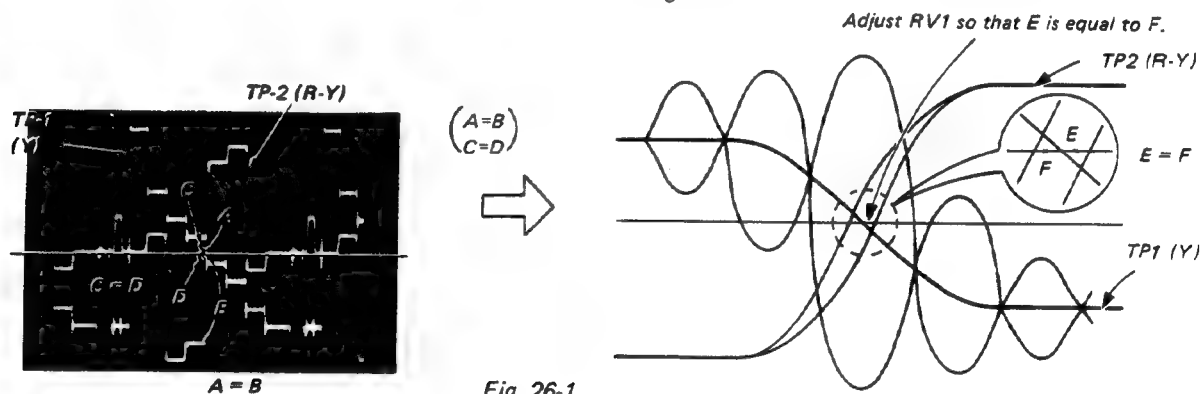
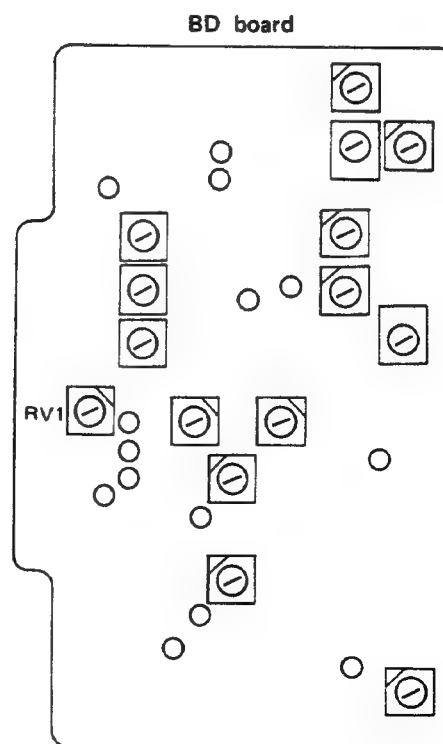
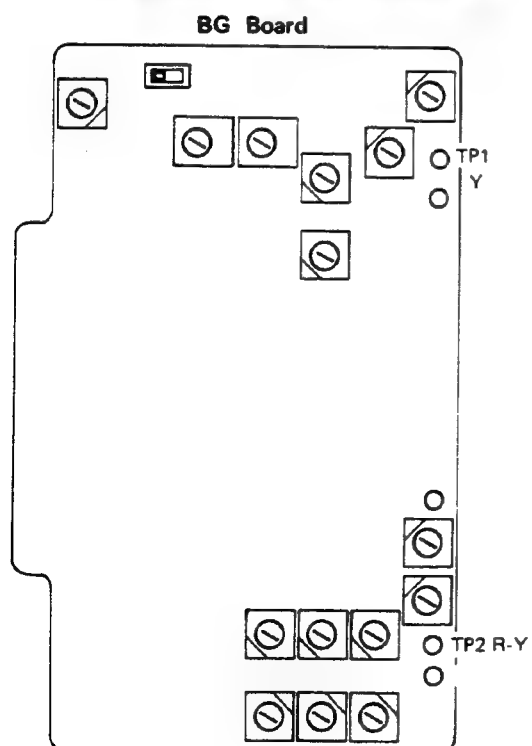
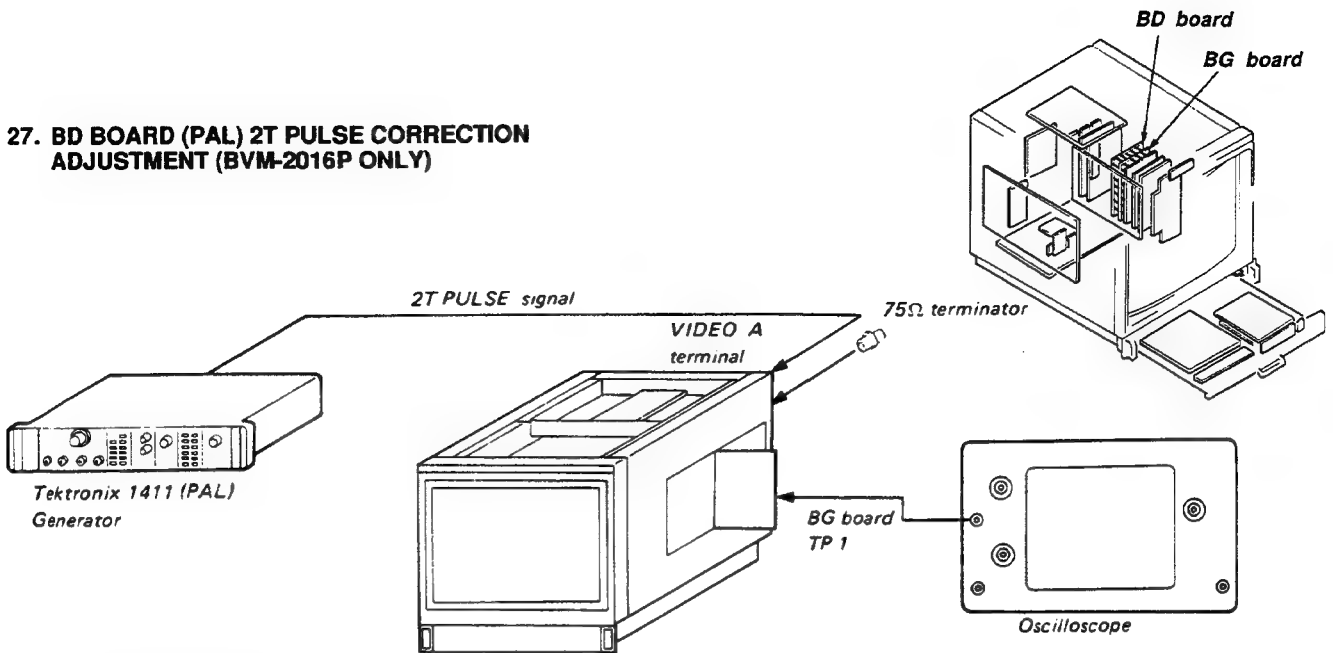


Fig. 26-1



27. BD BOARD (PAL) 2T PULSE CORRECTION ADJUSTMENT (BVM-2016P ONLY)



1. Input 2T pulse signal to VIDEO A terminal of the set.
2. Connect an oscilloscope to the TP1 of BG board.
3. Adjust L2 of BD or BM board so that A is equal to B as shown in Fig. 27-1.
4. Change the input signal from 2T pulse to T pulse, and make sure the waveform balance is not lost extremely as shown in Fig. 27-1.

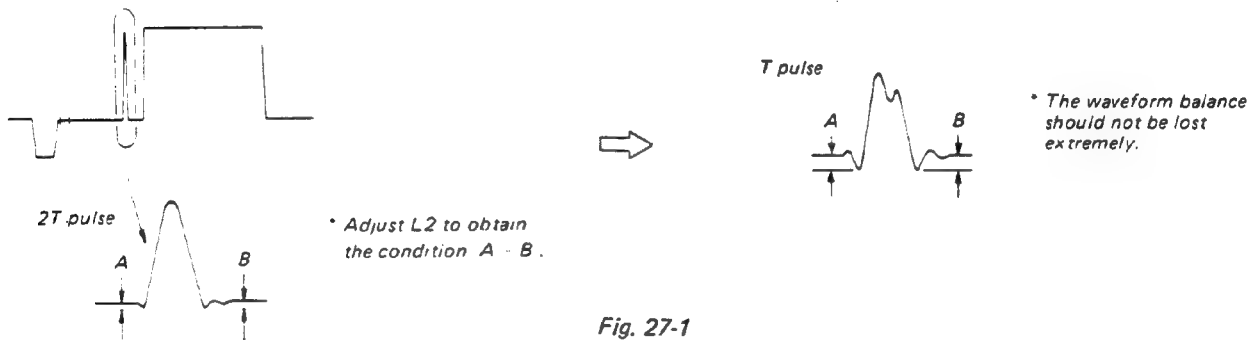
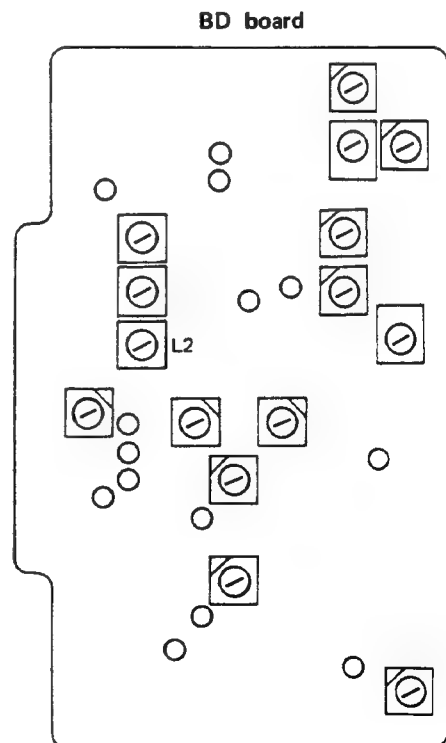
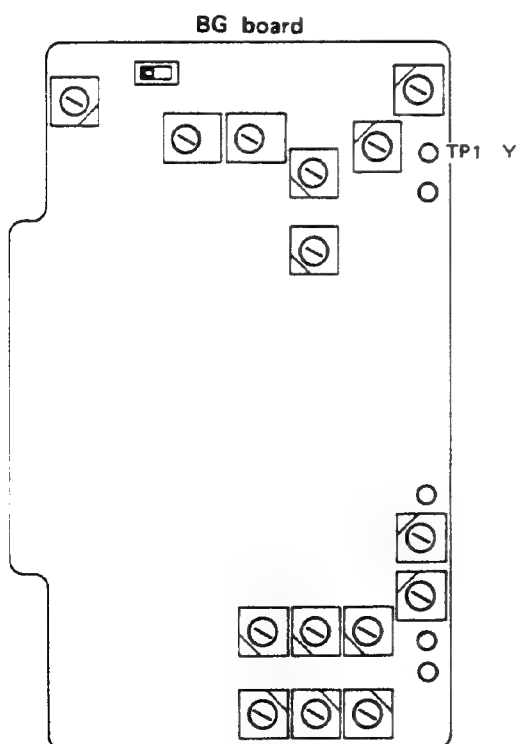
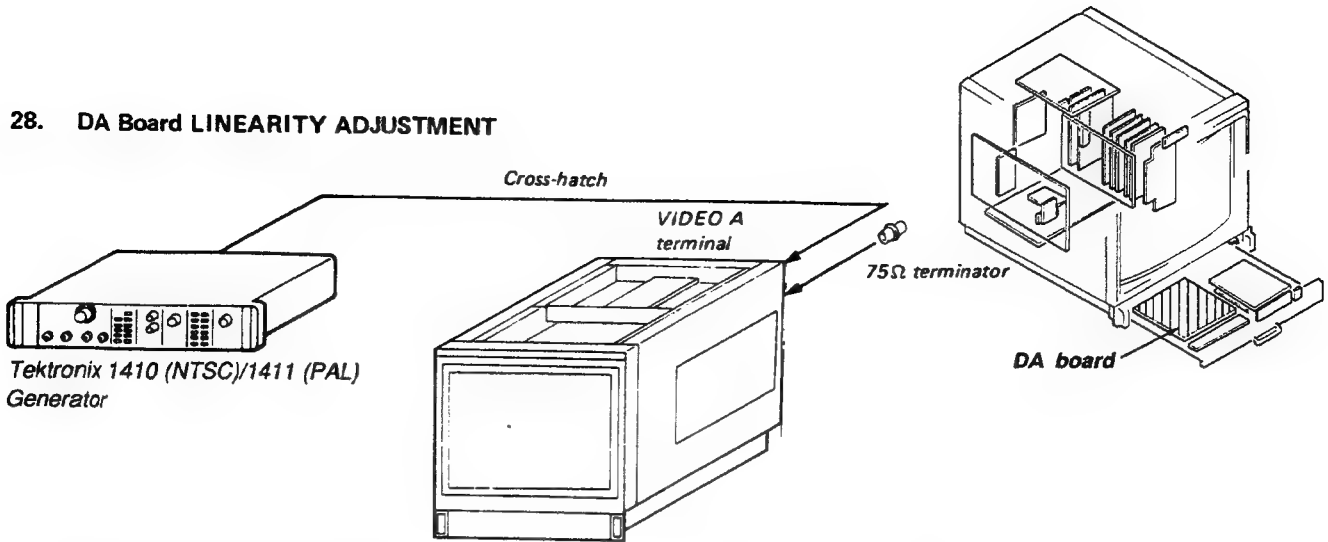


Fig. 27-1

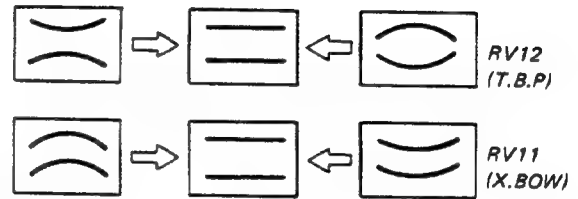


28. DA Board LINEARITY ADJUSTMENT



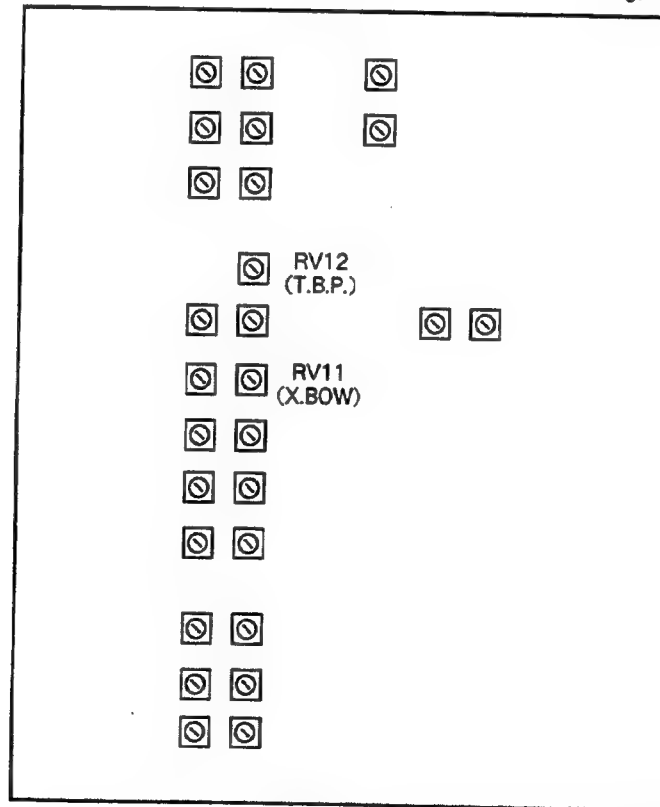
• Vertical Pincushion Adjustment

1. Input only the H line of cross-hatch signal.
2. Minimize the X.BOW distortion with X.BOW (RV11) on the DA board as shown in third from the top of Fig. 28-1.
3. Minimize the T and B pincushion distortion gain with T.B.P (RV12) on the DA board as shown in second from the top of Fig. 28-1.

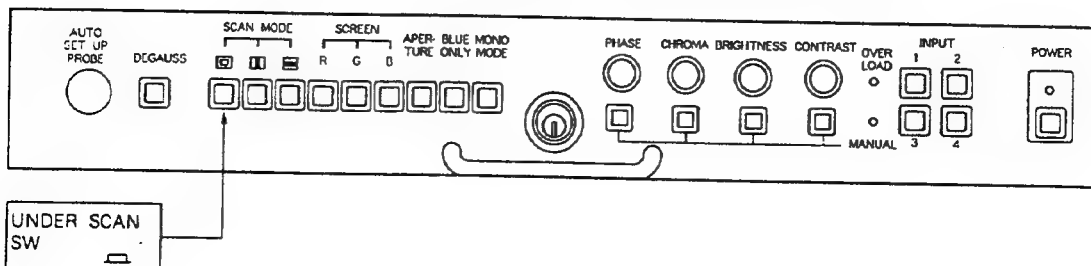


DA board

Fig. 28-1



FRONT PANEL



• Vertical Linearity Adjustment

1. Input only the H line of cross-hatch signal.
2. Adjust V center with V.CENTER (RV10) on the DA board.
3. Adjust the balance of V lineality with V.LB (RV9) on the DA board as shown in Fig. 28-2.
4. Adjust the gain of V lineality with V.LG (RV8) on the DA board as shown in Fig. 28-3.
5. Adjust the V.HEIGHT with V.H.N (RV3) on the DA board.
6. Mark tracking by repeating step 3. through 5.

RV9 V LIN BALANCE

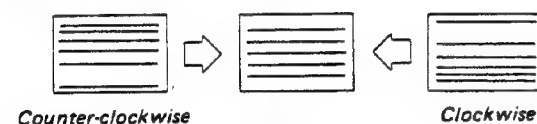


Fig. 28-2

RV8 V LIN GAIN

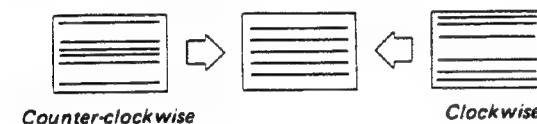


Fig. 28-3

Side Pincushion Adjustment

1. Input only the V line of cross-hatch signal.
2. Minimize the Y.BOW distortion with Y.BOW (RV13) on the DA board as shown in Fig. 28-7.
3. Minimize the Y.TILT distortion with Y.TILT (RV25) on the DA board as shown in Fig. 28-7.
4. Minimize the side pincushion distortion with S.P.N (RV5) on the DA board as shown in Fig. 28-4.
5. Minimize the side pincushion tilt distortion with S.P.T (RV7) on the DA board as shown in Fig. 28-5.
6. Set the SCAN selector to UNDER position.
7. Minimize the side pincushion distortion with S.P.U (RV6) on the DA board as shown in Fig. 28-4.

RV5 (S.P.N)
RV6 (S.P.U)



Fig. 28-4

RV7 (S.P.T)



Fig. 28-5

RV25 (Y.TILT)

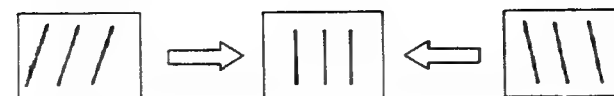


Fig. 28-6

RV13 (Y.BOW)



Fig. 28-7

• Horizontal Linearity Adjustment

1. Input only the V line of cross-hatch signal.
2. Adjust the horizontal centering with H CENTER (RV14) on the DA board.
3. Adjust the balance of H.lineality with H.L.B (RV22) on the DA board as shown in Fig. 28-8.
4. Adjust the gain of H.lineality with H.L.G (RV21) on the DA board as shown in Fig. 28-9.
5. Adjust the H.WIDTH with H.W.N (RV1) on the DA board.
6. Mark tracking by repeating step 3. through 5.
7. Set the SCAN selector to UNDER position.
8. Adjust the H.WIDTH with H.W.U (RV2) on the DA board.

RV28 (H.L.B)

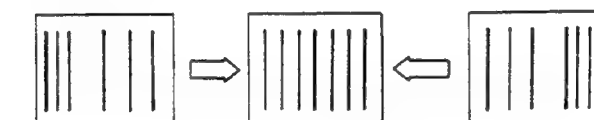


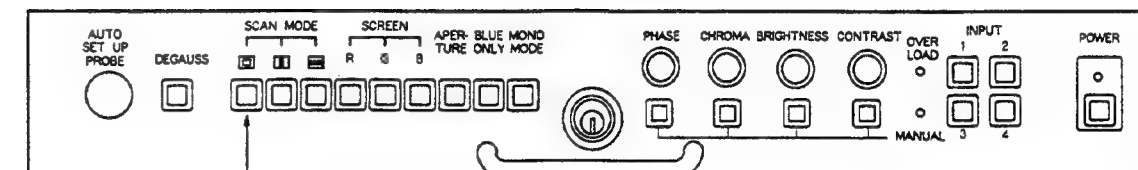
Fig. 28-8

RV27 (H.L.G)

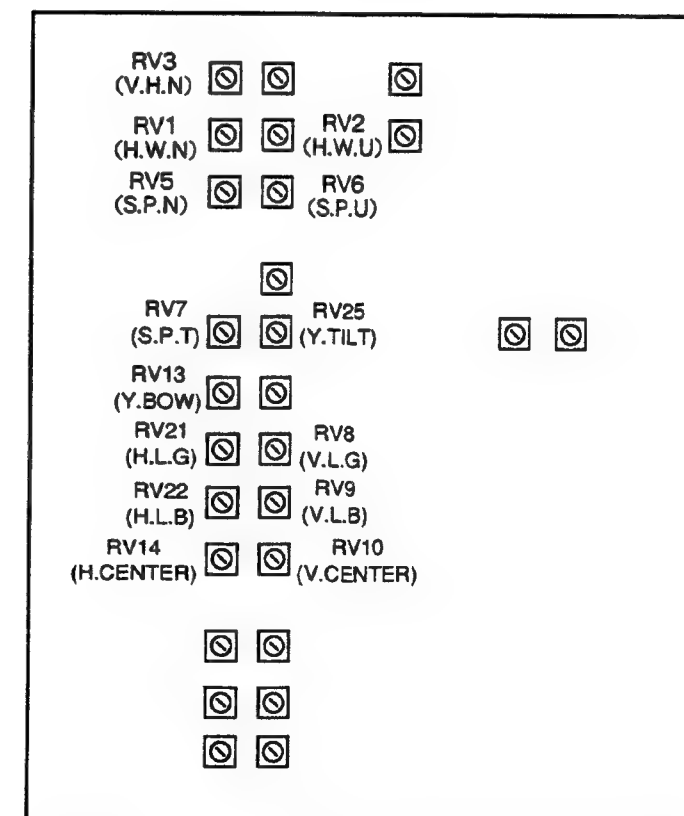


Fig. 28-9

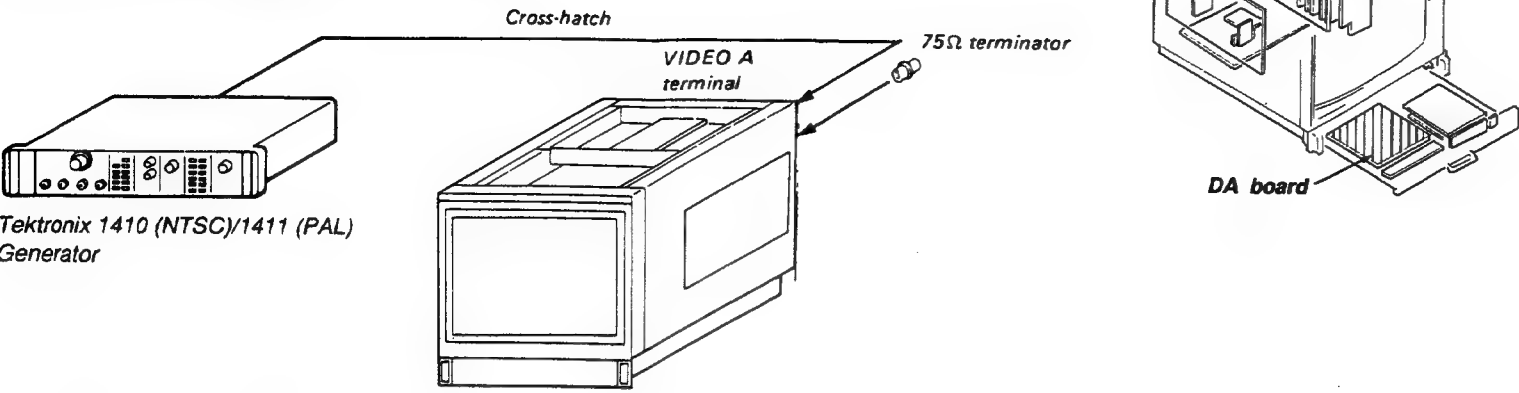
FRONT PANEL



DA board



29. DA, DB Board LINEARITY ADJUSTMENT



• H.OSC Free-run Adjustment

1. Set the SYNC button to EXT.
2. Adjust H.FREQ. (RV202) on the DB board until the picture movement is still or slow.

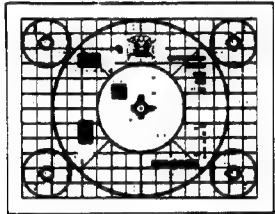


Fig. 29-1

3. Adjust H.PHASE (RV201) on the DB board for both sides of raster width without signal component coincidence.

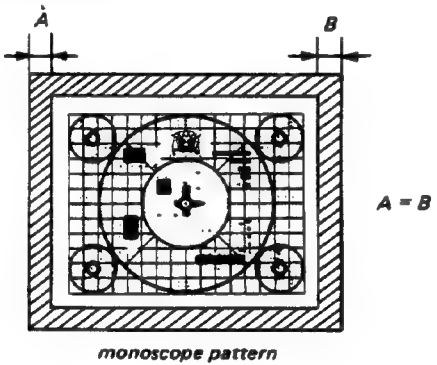


Fig. 29-3

• Horizontal Phase and Horizontal Blanking Adjustments

1. Set the SCAN selector to UNDER position.
2. Turn the horizontal blanking controls H.BLK.R fully clockwise and H.BLK.L fully counterclockwise. (When the raster at both sides of screen are not appear completely, turn H.W.U (RV2) until obtaining the raster.)

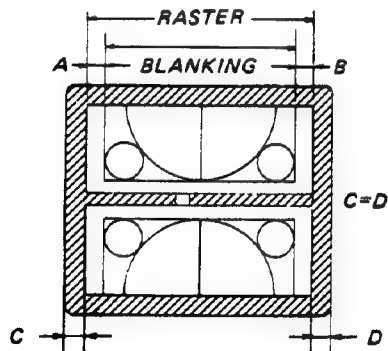


Fig. 29-2

4. Adjust H.BLK.R/H.BLK.L (RV24 and RV23) on the DA board so that the raster width without signal component become half.

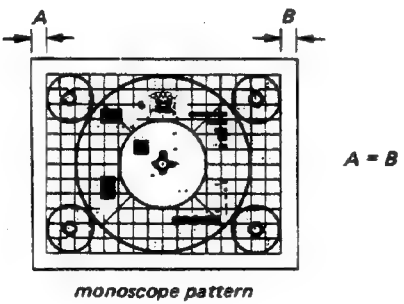
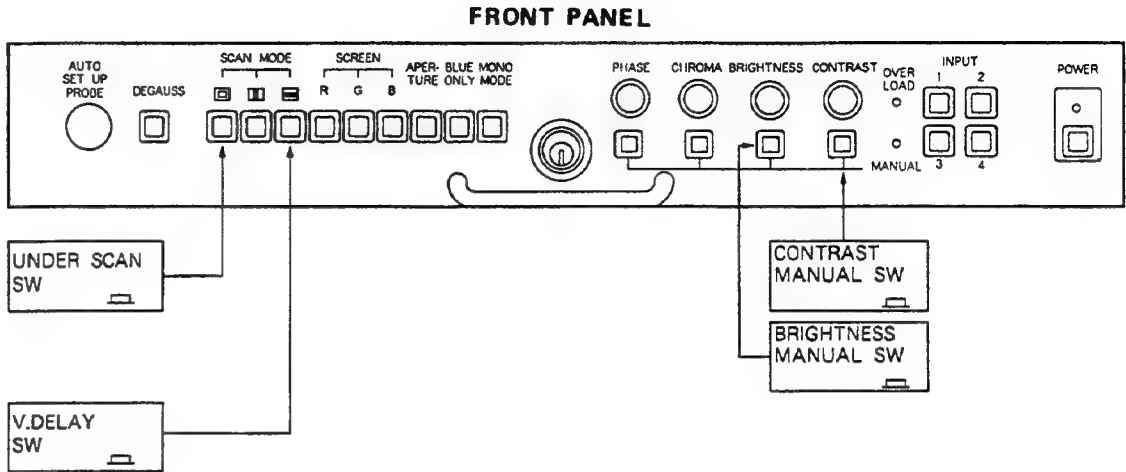
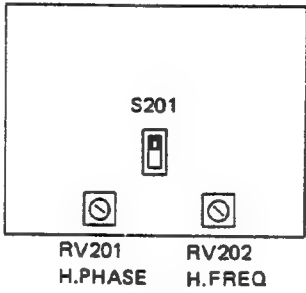


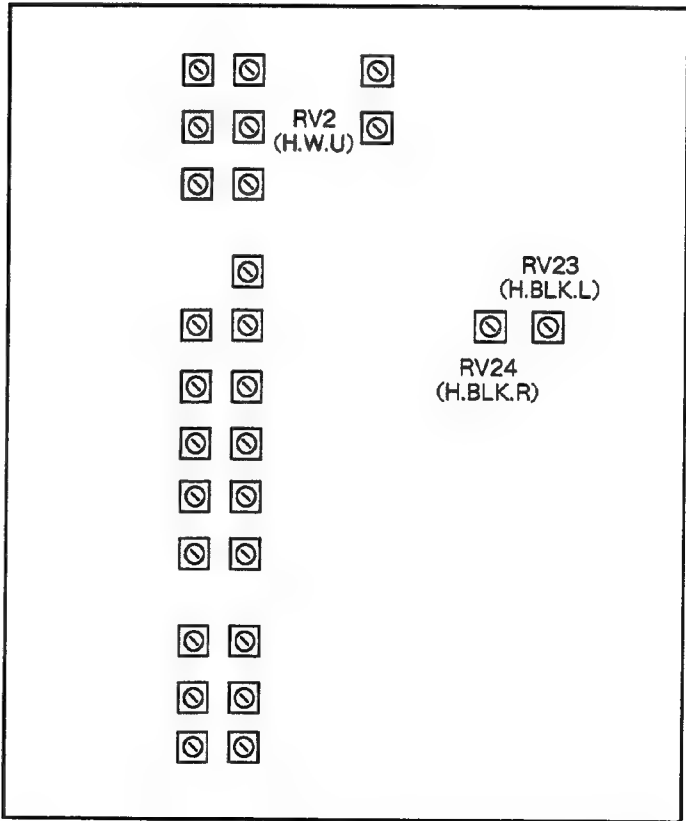
Fig. 29-4



DB board



DA board

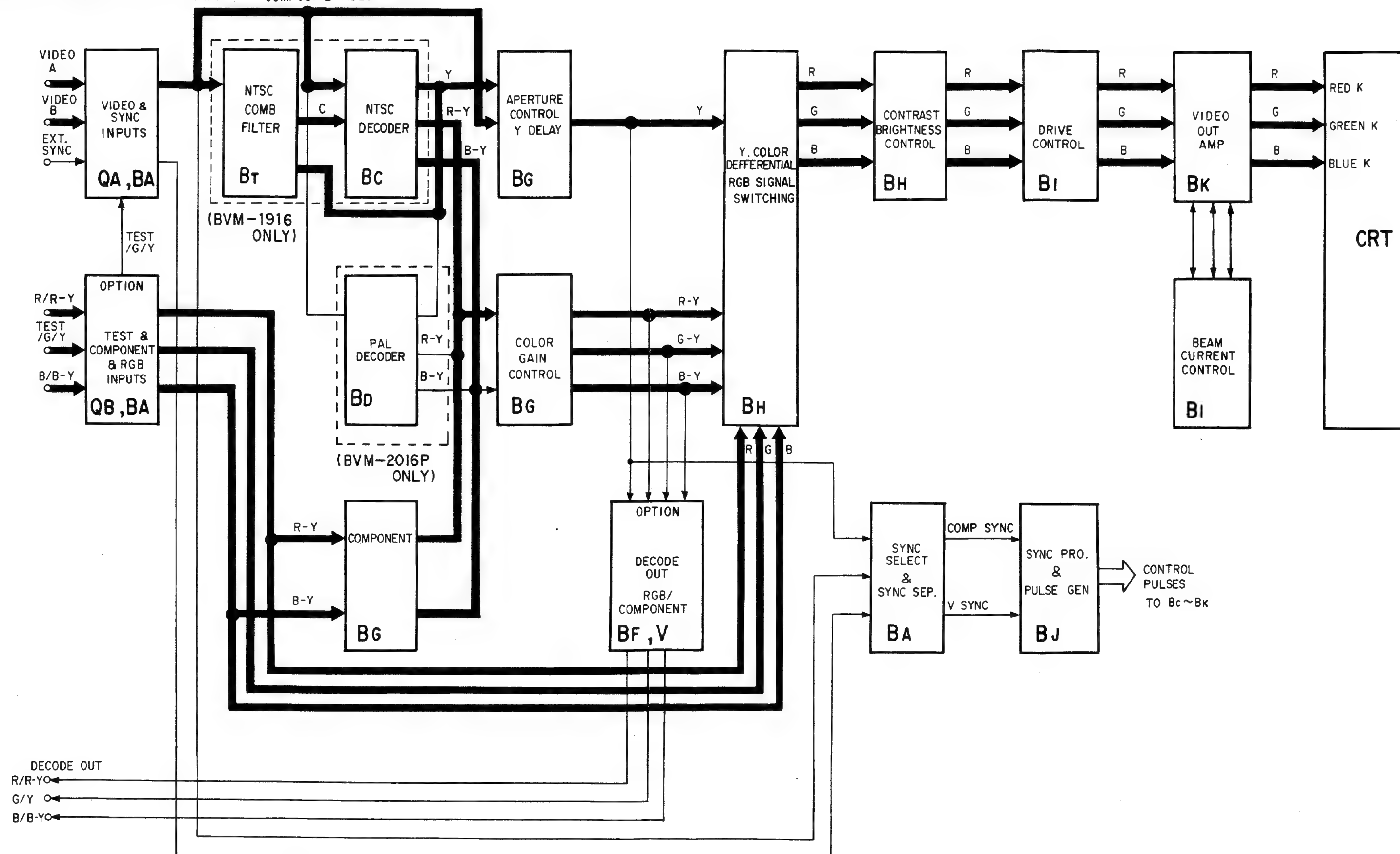


BLOCK DIAGRAM BLOCK DIAGRAM

SECTION 5 DIAGRAMS

5-1. BLOCK DIAGRAM
SIGNAL PROCESSING BLOCK DIAGRAM

COMPOSITE VIDEO/Y



5-1

5-2

BLOCK DIAGRAM BLOCK DIAGRAM



RED K

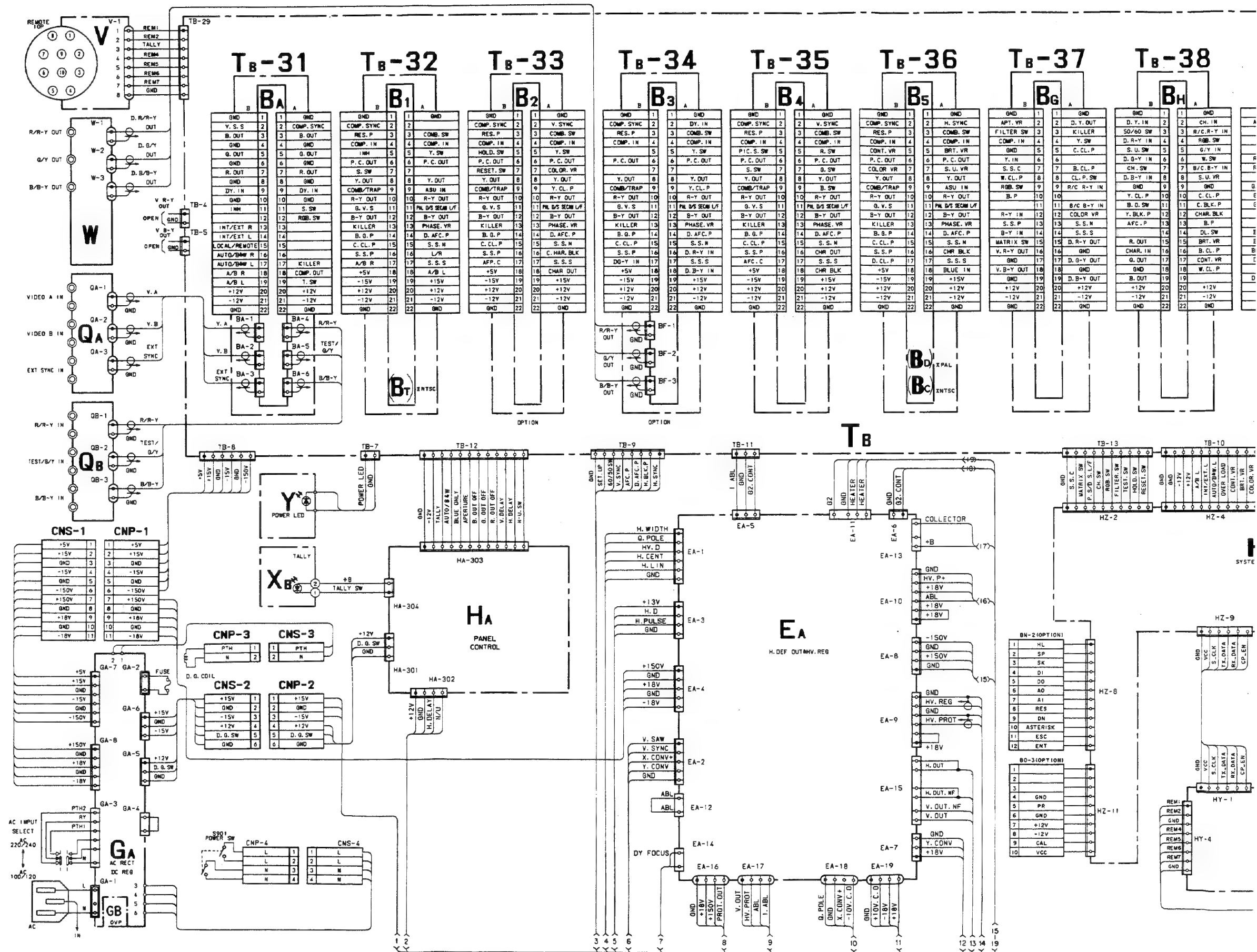
GREEN K

BLUE K

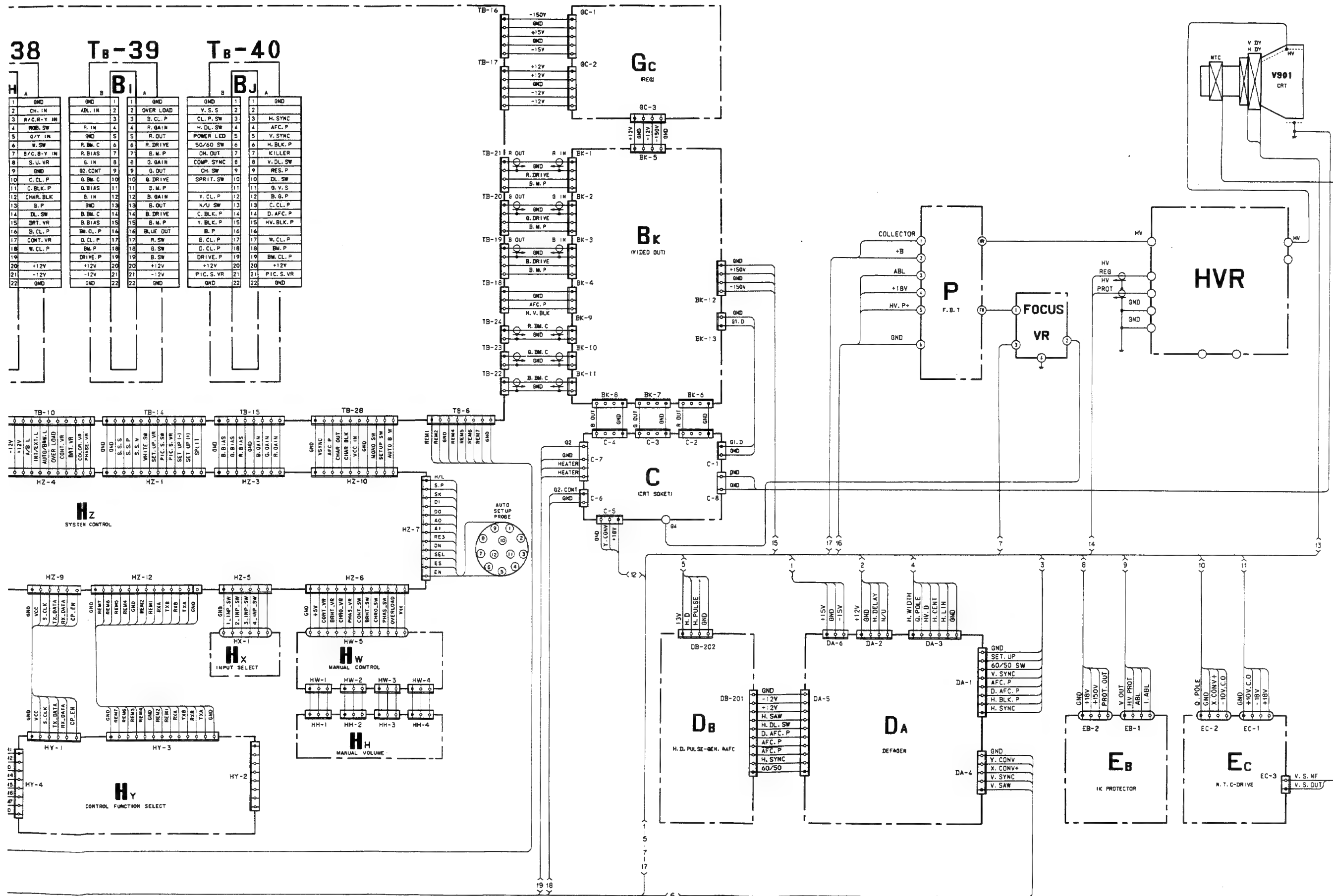
CRT



5-2. FRAME WIRING DIAGRAM



FRAME FRAME










5-3. MOUNTING AND SCHEMATIC DIAGRAMS

Note:



Note: The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.




Note: Les composants identifiés par une trame et par une marque Δ sont d'une importance critiques pour la sécurité. Ne les remplacer que par des pièce de numéro spécifié.

- All capacitors are in μF unless otherwise noted. p : μF 50WV or less are not indicated except for electrolytics.
 - All resistors are in ohms, 1/10W on the BT, DC, HY and HZ boards and 1/4W on the rest of the boards unless otherwise specified.
k Ω = 1000 Ω , M Ω = 1000k Ω
 - METAL FILM (:RN) resistors in 1%, 1/4 W unless otherwise specified.
 -  : nonflammable resistor.
 - Δ : internal component.
 -  : direct connection to points marked  on the chassis
 -  : panel designation.
 - All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
 - The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- When replacing components identified by , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  and repeat the adjustment until the specified value is achieved.
- Refer to R52, R53, R67, R68, R73, R75, R106, R108, R115 and R135.
- Adjust on page 4-11 ~ 4-16.
- When replacing the part in below table, be sure to perform the related adjustment.

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE WIREWOUND
COIL	: RB	NONFLAMMABLE CEMENT
	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: AIR	HIGH RIPPLE

Part replaced ()	Adjustment ()
IC3, C59, R67, R68, R78, RV2 (GA board)	B+ MAXCONFIRMATION (R67, R68) Page 4-11.
Q13, Q14, R52, R53 (GA board) Q3, Q4, Q5, D5, D6, D7, D8, R4, R5, R19, R20, R21, R22 (GB board)	B+ PROTECTOR (R52, R53) Page 4-11.
IC2, IC3, R61, R62, R71, R71, R72, R73, R74, R75, R88, RV1 (EA board) HVR	HIGH VOLTAGE REGULATOR CONFIRMATION (R73, R75) Page 4-14, 15.
IC4, D24, D25, D27, R89, R90, R102, R103, R104, R105, R106, R107, R108, R111, R152 (EB board) HVR	HIGH VOLTAGE HOLD DOWN ADJUSTMENT AND CONFIRMATION (R106, R108) Page 4-14.
IC4, D24, D26, D27, R89, R90, R102, R103, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R153 (EB board) FBT (P board)	BEAM CURRENT PROTECTOR-1 CONFIRMATION (R115) Page 4-15, 16.
IC6, D29, D51, R122, R123, R124, R130, R131, R132, R133, R134, R135, R136, R137, R138, R140, R141 (EB board) FBT (P board)	BEAM CURRENT PROTECTOR-2 CONFIRMATION (R135) Page 4-16.



-  : adjustment for repair.
-  : B+ bus.
-  : B- bus.
- Circled numbers are waveform references.
- Waveforms are taken with a color-bar signal input and with a 75 Ω terminator connected to an open terminal.
- Switches and controls are as set as follows unless otherwise noted.

- Switches and controls are as set as follows unless otherwise noted.

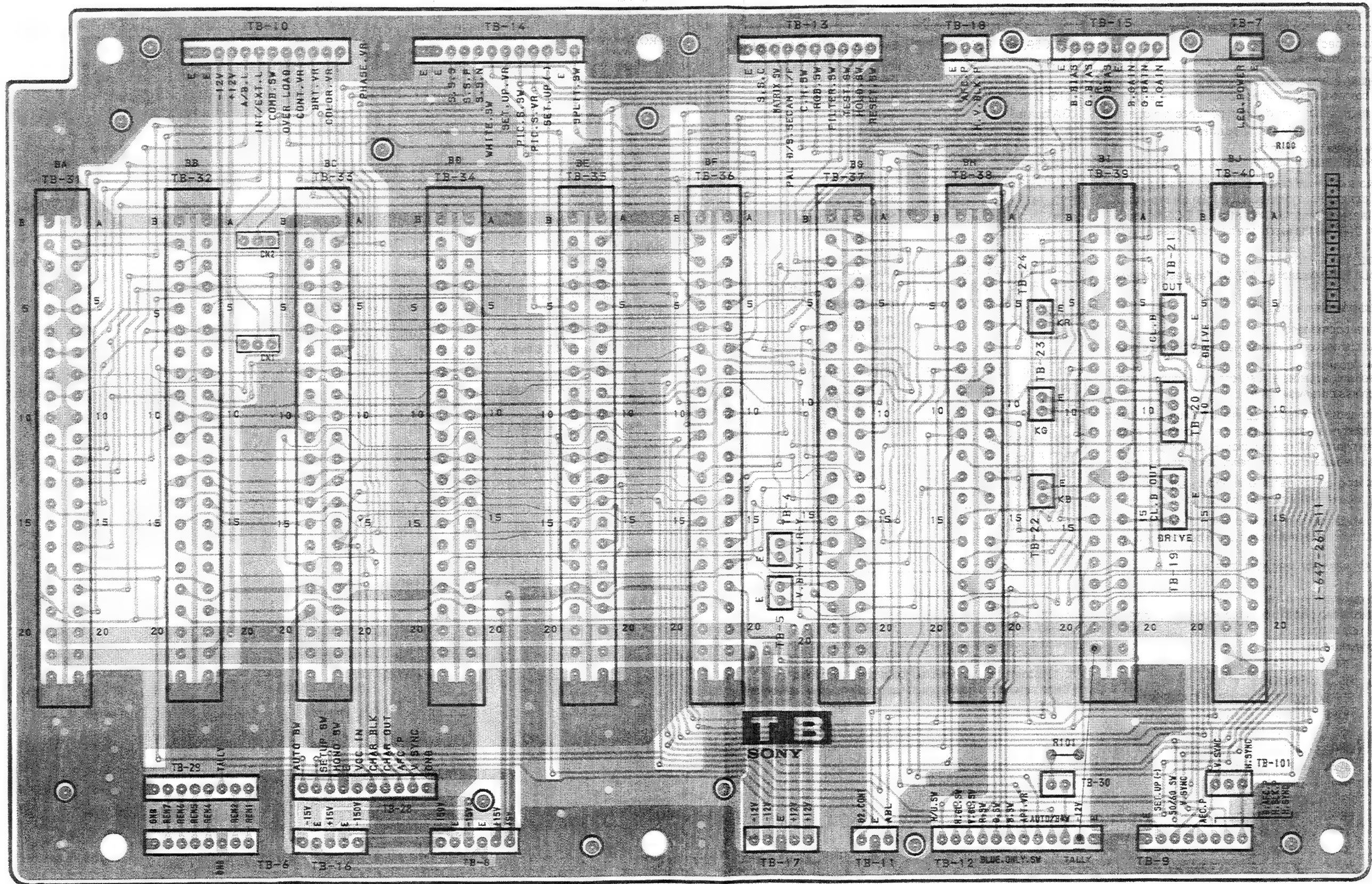
FRONT PANEL

• INPUT selector	1	HX board
• CONTRAST MANUAL switch	PRESET	HW board
• BRIGHTNESS MANUAL switch	PRESET	
• CHROMA MANUAL switch	PRESET	
• PHASE MANUAL switch	PRESET	
• SCAN MODE switch		HA board
☐ UNDER SCAN	NOR	
▣ H. DELAY	NOR	
▣ V. DELAY	NOR	
• SCREEN switch (R)	NOR	
• SCREEN switch (G)	NOR	
• SCREEN switch (B)	NOR	
• APT switch	NOR	
• BLUE ONLY switch	NOR	HY board
• MODE selector	AUTO	
SUB CONTROL PANEL		
• FORMAT button	CODED	
• INPUT button	A	
• SYNC button	INT	
• COLOR SYSTEM button	NTSC (BVM-1916) PAL (BVM-2016P)	
• YC SEP button	COMB (BVM-1916) TRAP (BVM-2016P)	
• WHITE BALANCE button	D65/D93	
• ASPECT button	4 : 3	
• PIC SETUP button	OFF	
• SAD/VITC/MARKER button	OFF	
• FILTER button	OFF	DA board
• MATRIX button	OFF	
• PAL S/SECAM F/COMB S button	OFF	
• CROSS HATCH button	OFF	
• SPLIT SCREEN button	OFF	
• WHITE button	OFF	
• GRAY button	OFF	
• AFC switch	2m sec	

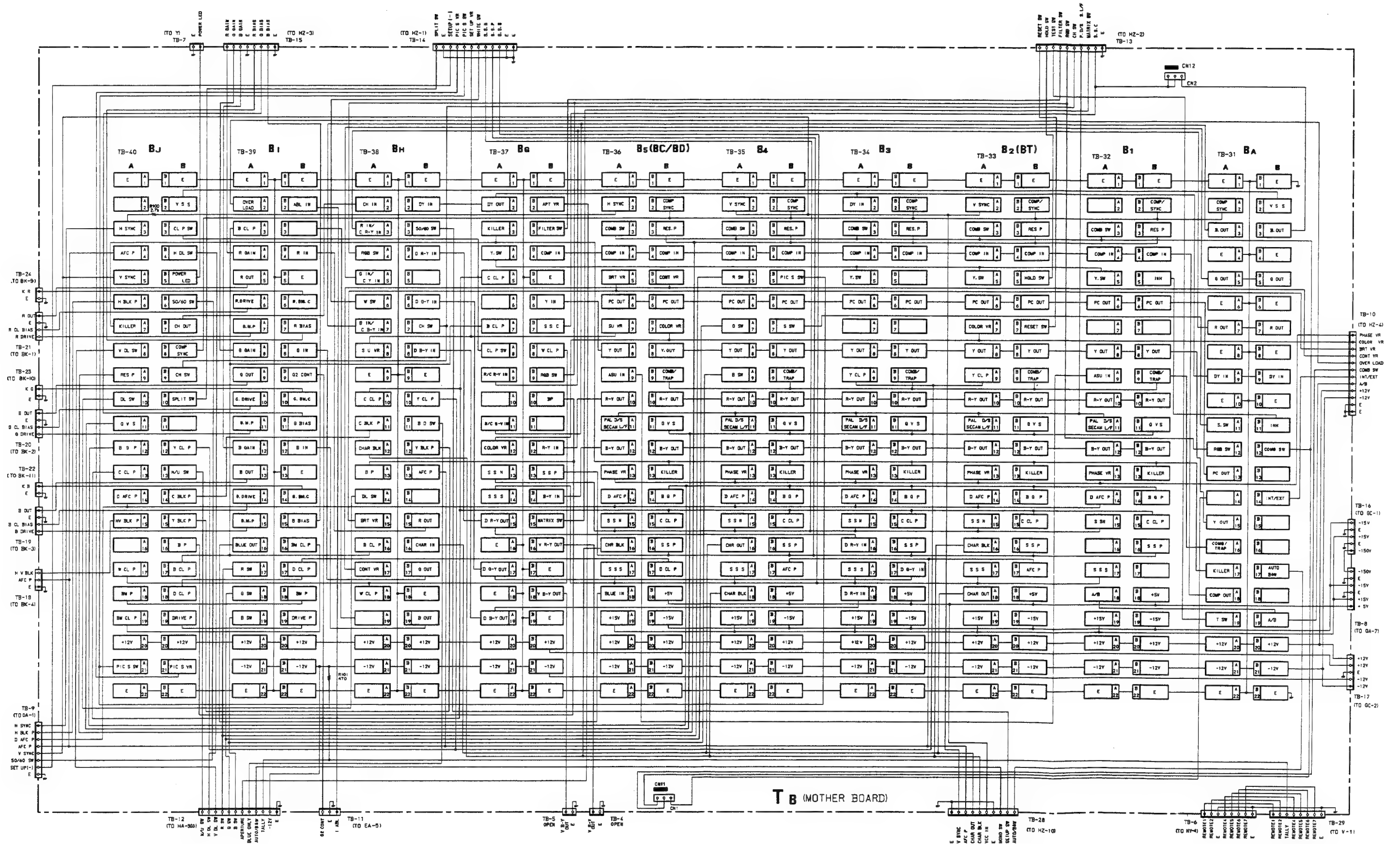
Note:

-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

TB board (MOTHER BOARD)

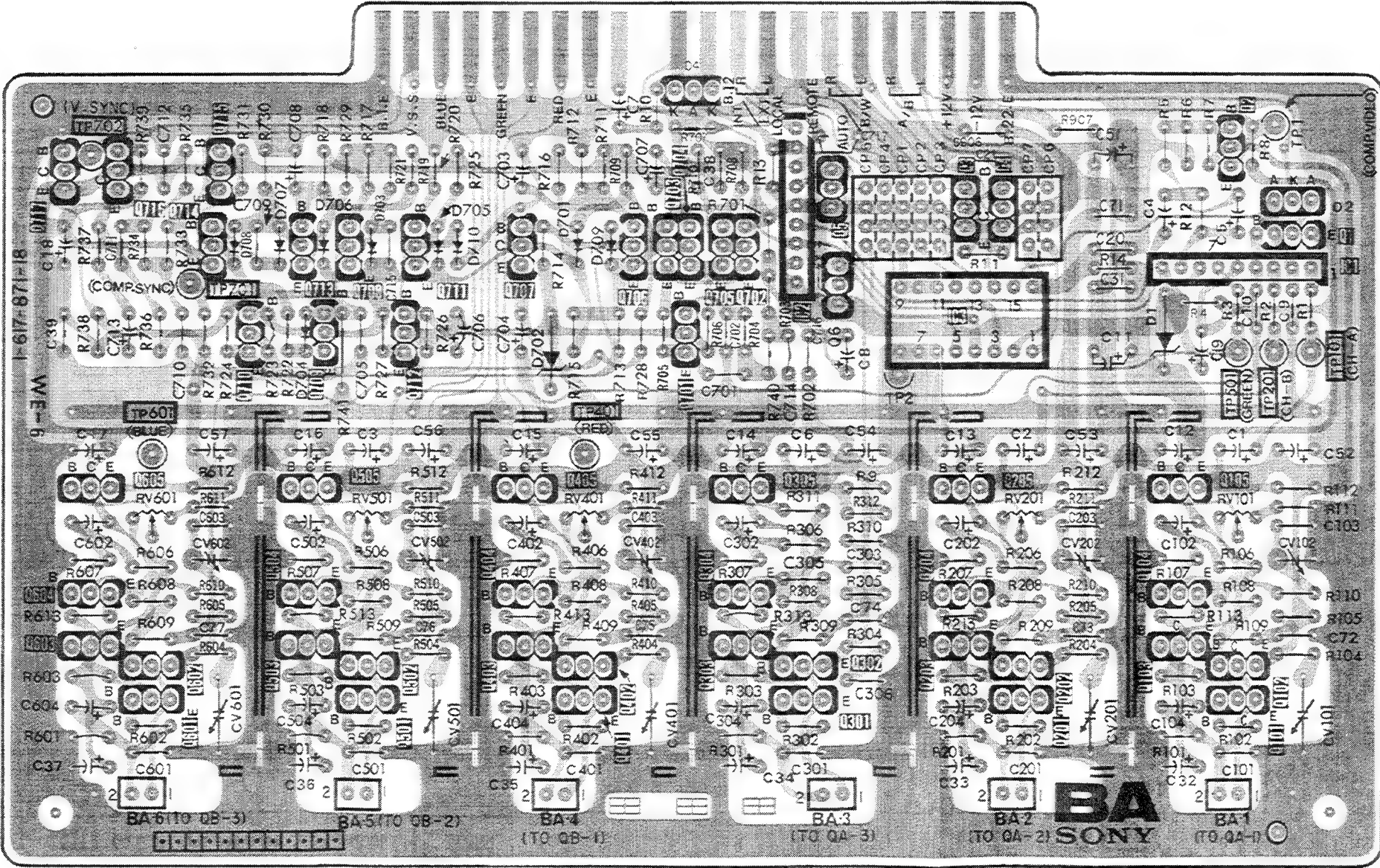


TB board (MOTHER BOARD)



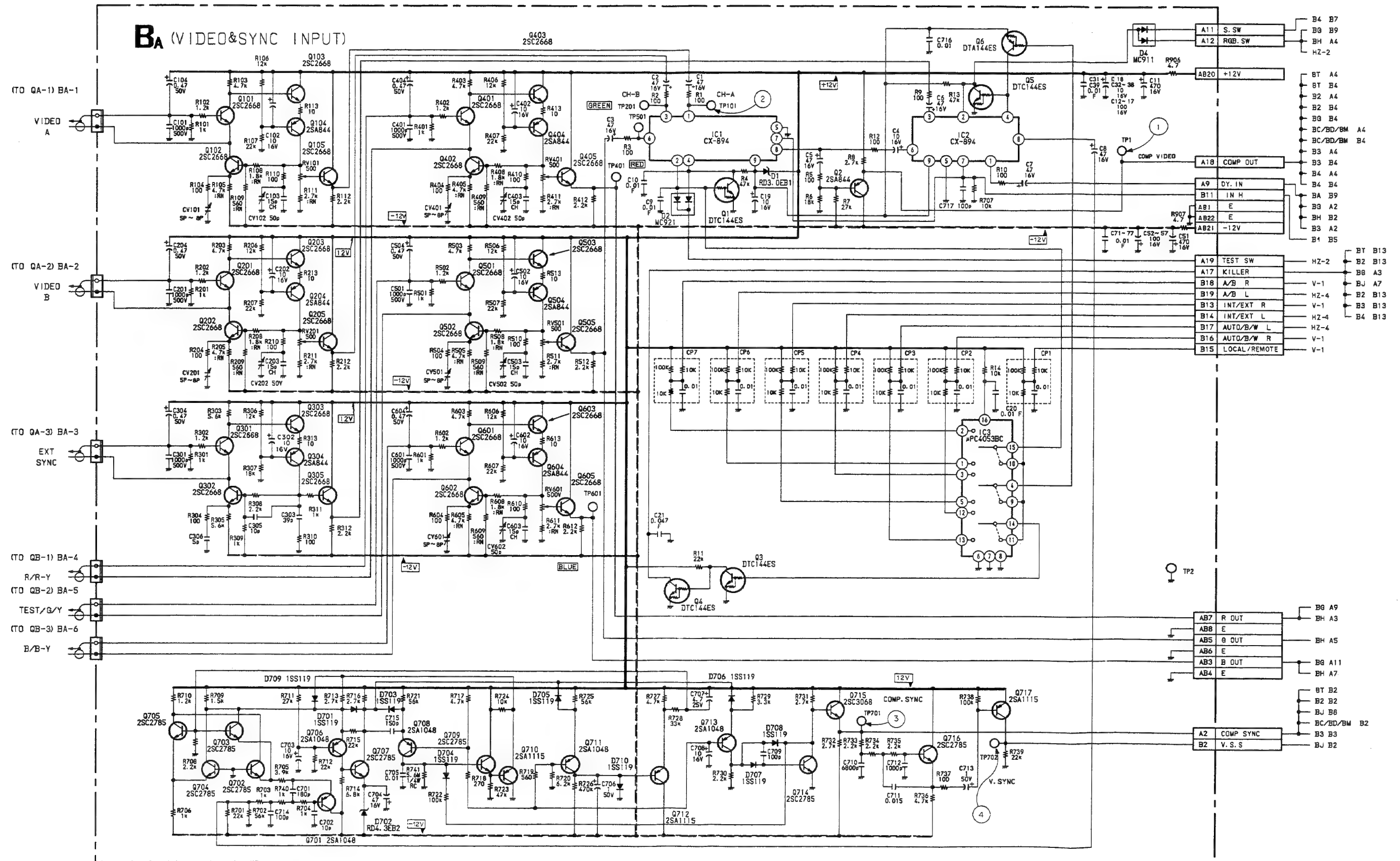
BA board (SYNC SELECT & SYNC SEP, HOOK UP)

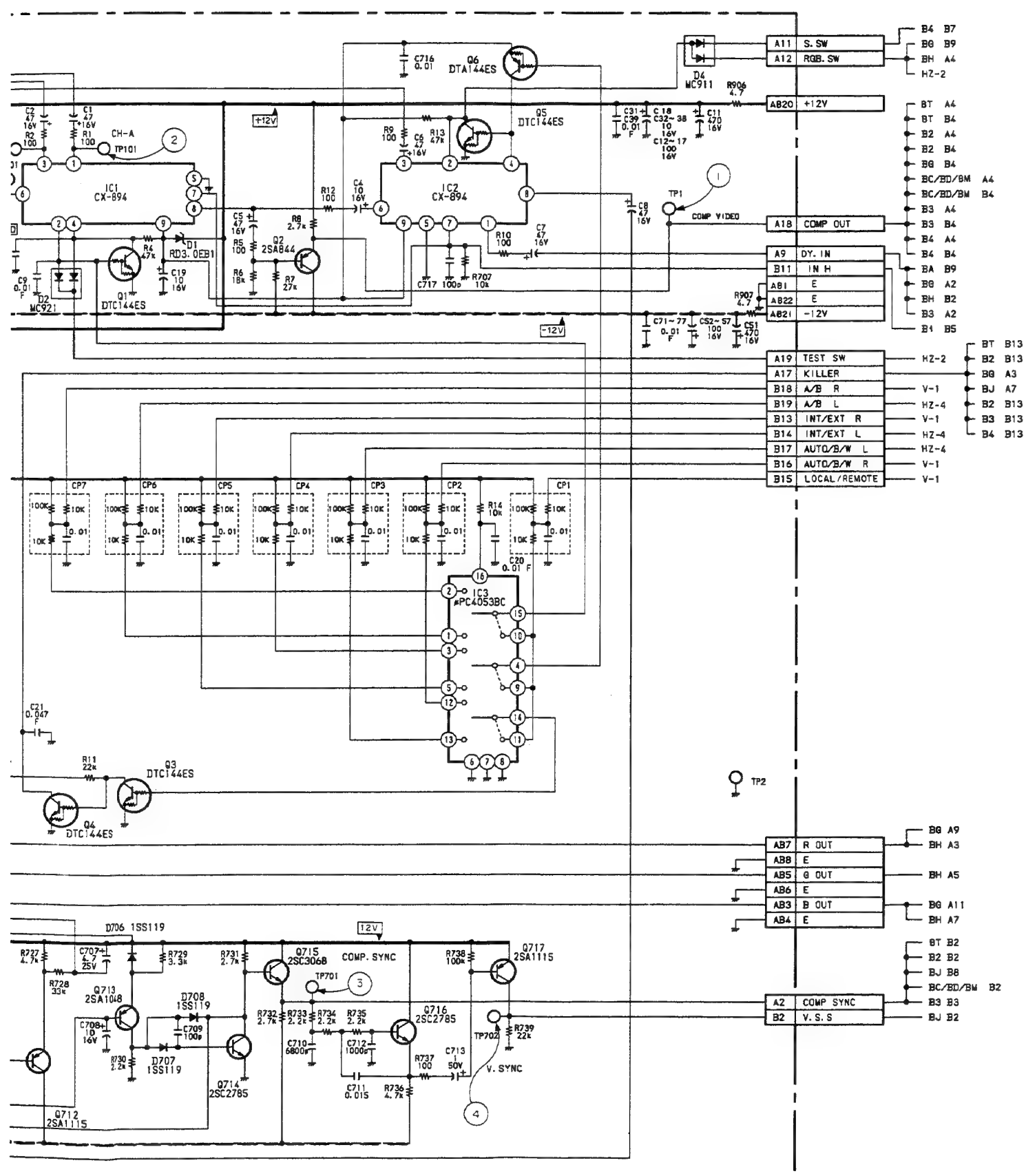
IC	2										3			1					
Q	717	716	715 714	713	708	711	707	706	704 703	705	702	5	6	3	4		2	1	
	605	604	710	505	709	712	405		701	305				205			105		
	603			504			404			304				204			104		
		602		503		502	403	402		303	302			203			103		
		601			501			401			301				202		102		
															201		101		
D	708 707 706 703 705 710										101 709	4				2			
	704										702					1			
TP	TP702		TP701				TR401				TP2						TP1		
ADJ	RV601			RV501	CV502		RV401							RV201			TP501	TP201	
		CV602			CV501				CV402								RV101	TP101	
		CV601							CV401						CV202			CV102	
															CV201			CV101	



• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

BA board (SYNC SELECT & SYNC SEP, HOOK UP)

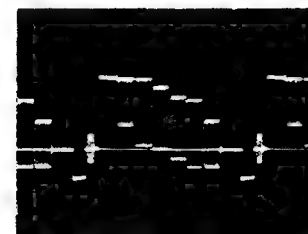




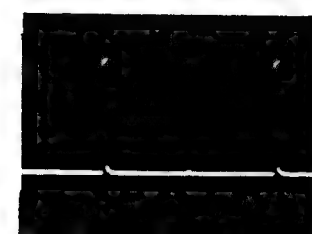
BA BOARD

IC1	CX894	INPUT SELECT
2	CX894	SYNC SELECT
3	MC14053BCP	LOCAL/REMOTE SW
Q1	DTC144ES	INPUT SELECT CONTROL
2	2SA844	BUFF
3	DTC144ES	KILLER
4	DTC144ES	KILLER
5	DTC144ES	SYNC SELECT CONTROL
6	DTA144ES	INT/EXT CONTROL
101	2SC2668	VIDEO A AMP
102	2SC2668	VIDEO A AMP
103	2SC2668	VIDEO A AMP
104	2SA844	VIDEO A AMP
105	2SC2668	VIDEO A AMP
201	2SC2668	VIDEO B AMP
202	2SC2668	VIDEO B AMP
203	2SC2668	VIDEO B AMP
204	2SA844	VIDEO B AMP
205	2SC2668	VIDEO B AMP
301	2SC2668	EXT SYNC AMP
302	2SC2668	EXT SYNC AMP
303	2SC2668	EXT SYNC AMP
304	2SA844	EXT SYNC AMP
305	2SC2668	EXT SYNC AMP
401	2SC2668	R-Y/R AMP
402	2SC2668	R-Y/R AMP
403	2SC2668	R-Y/R AMP
404	2SA844	R-Y/R AMP
405	2SC2668	R-Y/R AMP
501	2SC2668	TEST/Y/G AMP
502	2SC2668	TEST/Y/G AMP
503	2SC2668	TEST/Y/G AMP
504	2SA844	TEST/Y/G AMP
505	2SC2668	TEST/Y/G AMP
601	2SC2668	B-Y/B AMP
602	2SC2668	B-Y/B AMP

Q603	2SC2668	B-Y/B AMP
604	2SA844	B-Y/B AMP
605	2SC2668	B-Y/B AMP
701	2SA1048	SYNC AGC
702	2SC2785	SYNC AGC
703	2SC2785	SYNC AGC
704	2SC2785	SYNC AGC
705	2SC2785	SYNC AGC
706	2SA1048	SYNC AGC
707	2SC2785	SYNC AGC
708	2SA1048	SYNC AGC
709	2SC2785	SYNC AGC
710	2SA1115	SYNC AGC
711	2SA1048	SYNC AGC
712	2SA1115	SYNC AGC
713	2SA1048	COMP SYNC SEP
714	2SC2785	COMP SYNC SEP
715	2SC3068	COMP SYNC SEP
716	2SC2785	V SYNC SEP
717	2SA1115	V SYNC SEP
D1	RD3 0E-B1	+9V REG
2	MC921	INPUT SELECT CONTROL
4	MC911	SYNC SELECT CONTROL
701	1SS119	SYNC AGC
702	RD4 3E-B2	-7.5V REG
703	1SS119	SYNC AGC
704	1SS119	SYNC AGC
705	1SS119	SYNC AGC
706	1SS119	SYNC AGC
707	1SS119	COMP SYNC SEP
708	1SS119	COMP SYNC SEP
709	1SS119	SYNC AGC
710	1SS119	SYNC AGC



① 1Vp-p (H)
② 1Vp-p (H)

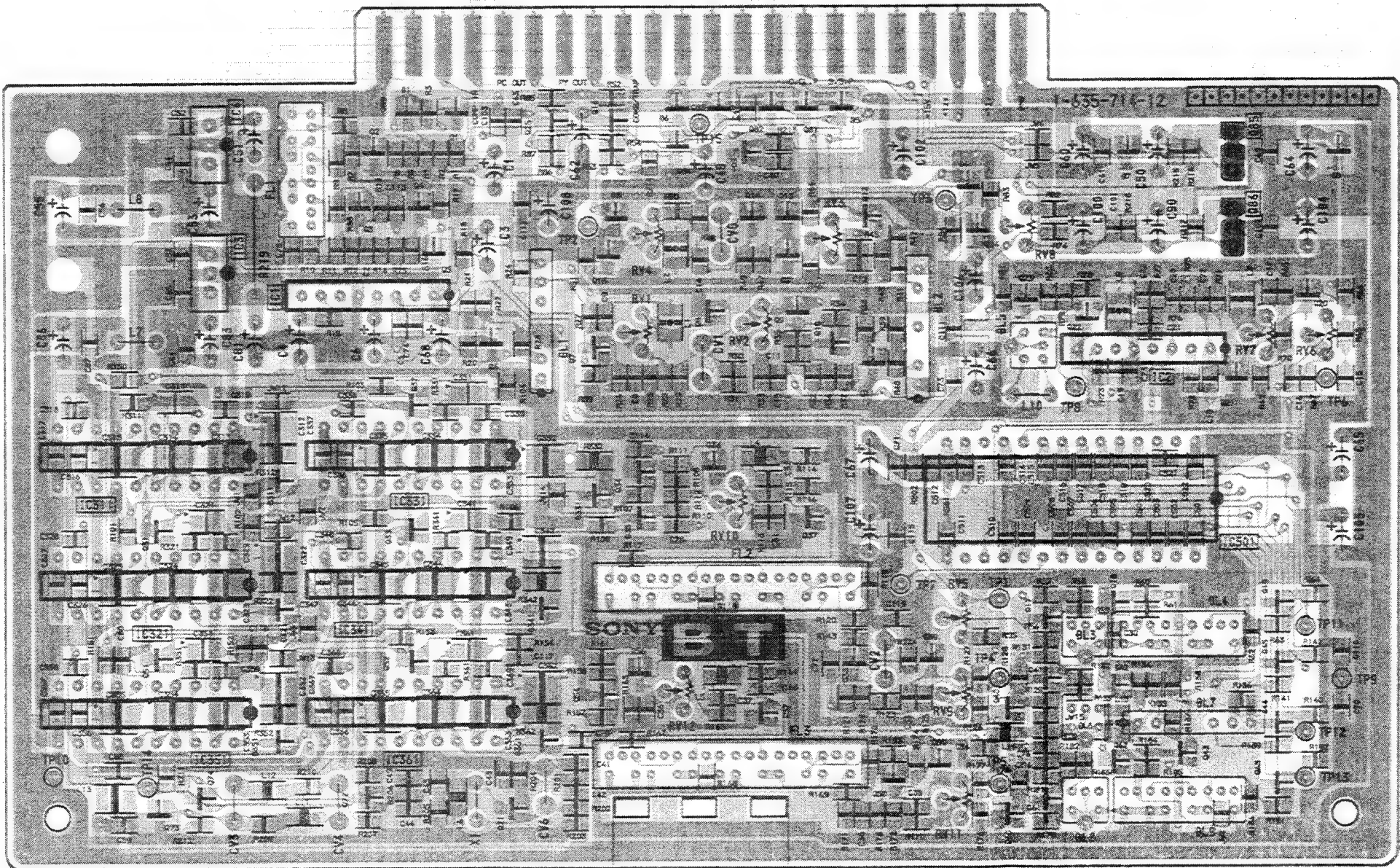
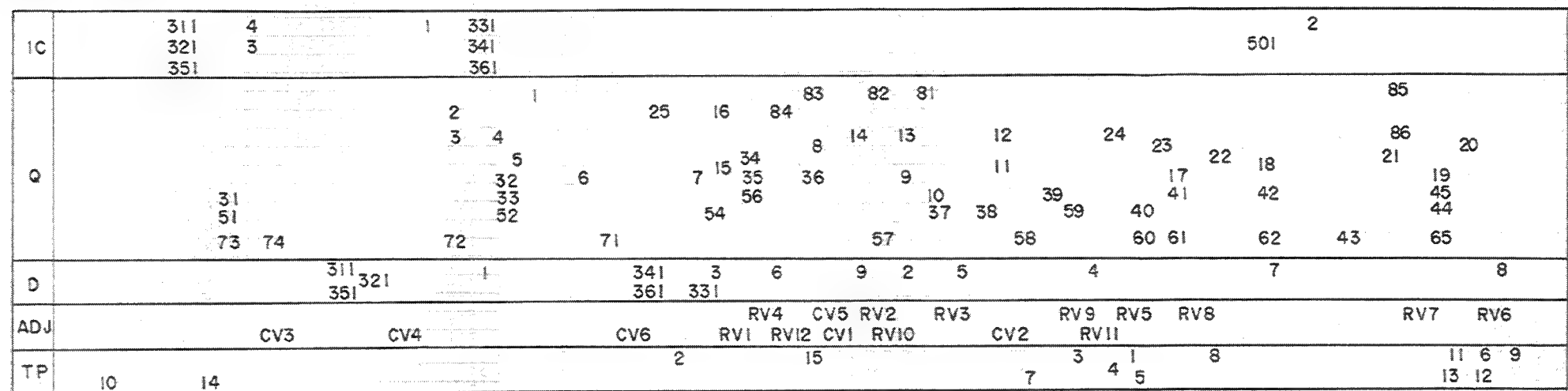


④ 12Vp-p (V)



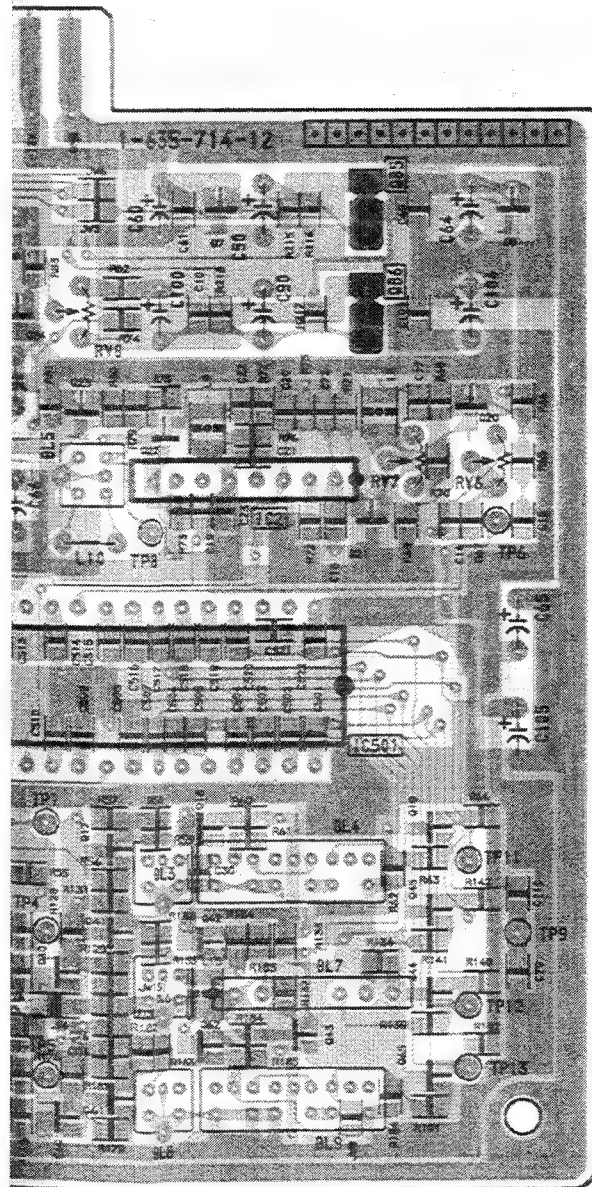
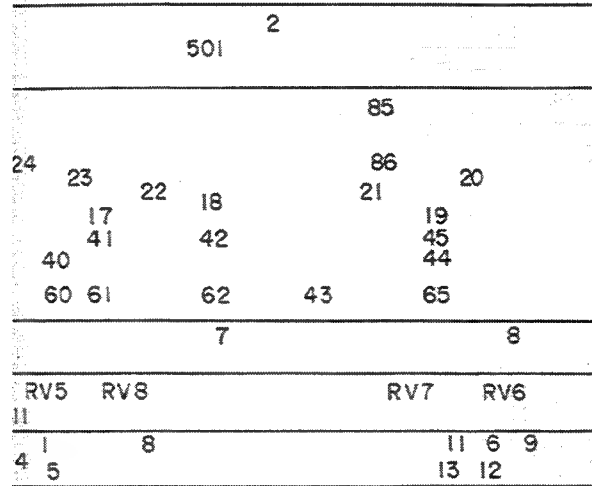
③ 12Vp-p (H)

BT board (3 LINE DYNAMIC COMB FILTER, 2 LINE SIMPLE COMB FILTER, BPF)
(BVM-1915 ONLY)



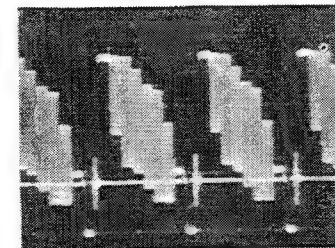
BT BOARD		
IC1	LA7816	Y SELECT
2	LA7816	C SELECT
3	NJM7805FA	5V REG
4	NJM7805FA	5V REG
331	CXL1009P	CCD
341	CXL1009P	CCD
351	CXL1009P	CCD
501	CXA1539P	CORRELATION
01	2SA812	BUFFER
2	2SC1623	BUFFER
3	2SA1226	AMP
4	2SC2757	AMP
5	2SC1623	AMP
6	2SC1623	Y DELAY
7	2SA1226	Y DELAY
8	2SA812	Y DELAY
9	2SA1226	Y/C MIX
10	2SC2757	Y/C MIX
11	2SC1623	Y AMP & BUFFER
12	2SA1226	Y AMP & BUFFER
13	2SC2757	Y AMP & BUFFER
14	2SC2757	Y DELAY
15	2SA812	Y DELAY
16	2SC3624A	BUFFER & SW
17	2SC1623	BPF 140 nsec(NTSC)110 nsec
18	2SA812	BPF 140 nsec(NTSC)110 nsec
19	2SC1623	BPF 140 nsec(NTSC)110 nsec
20	2SC2757	S COMB C LEVEL, PHASE
21	2SC1623	S COMB C LEVEL, PHASE
22	2SC1623	BPF, BUFFER
23	2SC1623	BPF, BUFFER
24	2SA812	BPF, BUFFER
25	2SC3624A	BUFFER & SW
32	2SC1623	1H DELAY(NTSC)2H DELAY(P)
33	2SC1623	1H DELAY(NTSC)2H DELAY(P)
34	2SA812	1H DELAY(NTSC)2H DELAY(P)
35	2SA812	1H DELAY(NTSC)2H DELAY(P)
36	2SA1226	1H DELAY(NTSC)2H DELAY(P)
37	2SC1623	AMP
38	2SA1226	AMP
39	2SC2757	AMP
40	2SC1623	AMP
41	2SC1623	BPF 140 ns DELAY(NTSC)110 ns
42	2SA812	BPF 140 ns DELAY(NTSC)110 ns
43	2SC1623	BPF 140 ns DELAY(NTSC)110 ns
44	2SC1623	BPF 140 ns DELAY(NTSC)110 ns
45	2SC1623	BPF 140 ns DELAY(NTSC)110 ns
52	2SC1623	1H DELAY(NTSC)2H DELAY(P)
54	2SA812	1H DELAY(NTSC)2H DELAY(P)
56	2SA1226	1H DELAY(NTSC)2H DELAY(P)
57	2SC1623	AMP
58	2SA1226	AMP
59	2SC2757	AMP

• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

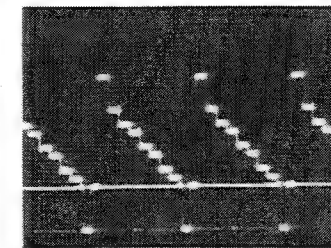


BT BOARD

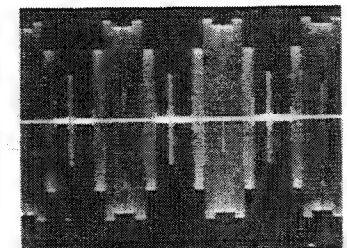
1	LA7818	Y SELECT	0 50	2SC1623	AMP
2	LA7818	C SELECT	51	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
3	NJM7805FA	5V REG	52	2SA812	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
4	NJM7805FA	5V REG	55	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)
331	CXL1009P	CCD	71	2SC2757	X-TAL OSC
341	CXL1009P	CCD	72	2SA1226	X-TAL OSC
351	CXL1009P	CCD	73	2SC2757	X-TAL OSC
501	CXA1539P	CORRELATION	74	2SA1226	X-TAL OSC
01	2SA812	BUFFER	81	DTA144EK	SW CONTROL
2	2SC1623	BUFFER	82	DTA144EK	SW CONTROL
3	2SA1226	AMP	83	DTA144EK	SW CONTROL
4	2SC2757	AMP	84	DTA144EK	SW CONTROL
5	2SC1623	AMP	85	2SB734	SW CONTROL
6	2SC1623	Y DELAY	86	2SD774	SW CONTROL
7	2SA1226	Y DELAY	01	1S2835	SW
8	2SA812	Y DELAY	2	RD5.8482	DC SHIFT
9	2SA1226	Y/C MIX	3	1S2837	SW
10	2SC2757	Y/C MIX	4	1S2837	SW
11	2SC1623	Y AMP & BUFFER	5	1S2837	SW CONTROL
12	2SA1226	Y AMP & BUFFER	6	1S2835	SW CONTROL
13	2SC2757	Y AMP & BUFFER	7	1S2837	SW CONTROL
14	2SC2757	Y DELAY	8	1S2835	SW CONTROL
15	2SA812	Y DELAY	9	1S2835	SW CONTROL
16	2SC3624A	BUFFER & SW	331	1S2837	CLAMP
17	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)	341	1S2837	CLAMP
18	2SA812	BPF 140 nsec(NTSC)110 nsec(PAL)	351	1S2837	CLAMP
19	2SC1623	BPF 140 nsec(NTSC)110 nsec(PAL)			
20	2SC2757	S COMB C LEVEL PHASE			
21	2SC1623	S COMB C LEVEL PHASE			
22	2SC1623	BPF, BUFFER			
23	2SC1623	BPF, BUFFER			
24	2SA812	BPF, BUFFER			
25	2SC3624A	BUFFER & SW			
32	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)			
33	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)			
34	2SA812	1H DELAY(NTSC)2H DELAY(PAL)			
35	2SA812	1H DELAY(NTSC)2H DELAY(PAL)			
36	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)			
37	2SC1623	AMP			
38	2SA1226	AMP			
39	2SC2757	AMP			
40	2SC1623	AMP			
41	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
42	2SA812	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
43	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
44	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
45	2SC1623	BPF 140 ns DELAY(NTSC)110 ns DELAY(PAL)			
52	2SC1623	1H DELAY(NTSC)2H DELAY(PAL)			
54	2SA812	1H DELAY(NTSC)2H DELAY(PAL)			
55	2SA1226	1H DELAY(NTSC)2H DELAY(PAL)			
57	2SC1623	AMP			
58	2SA1226	AMP			
59	2SC2757	AMP			



① 1.1 Vp-p(H)



② 0.95 Vp-p(H)



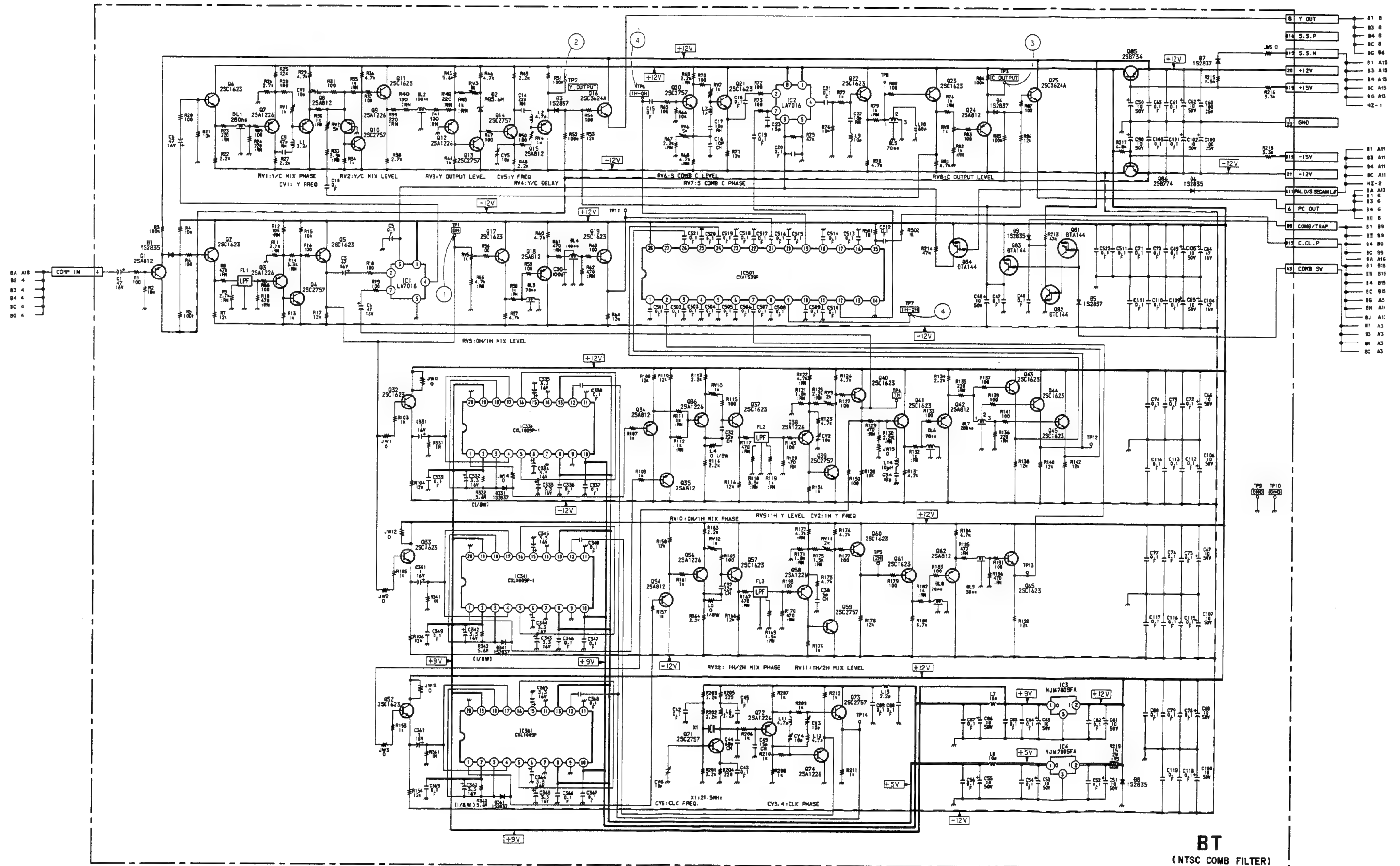
③ 0.58 Vp-p(H)

④ 1.9 Vp-p(H)

- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

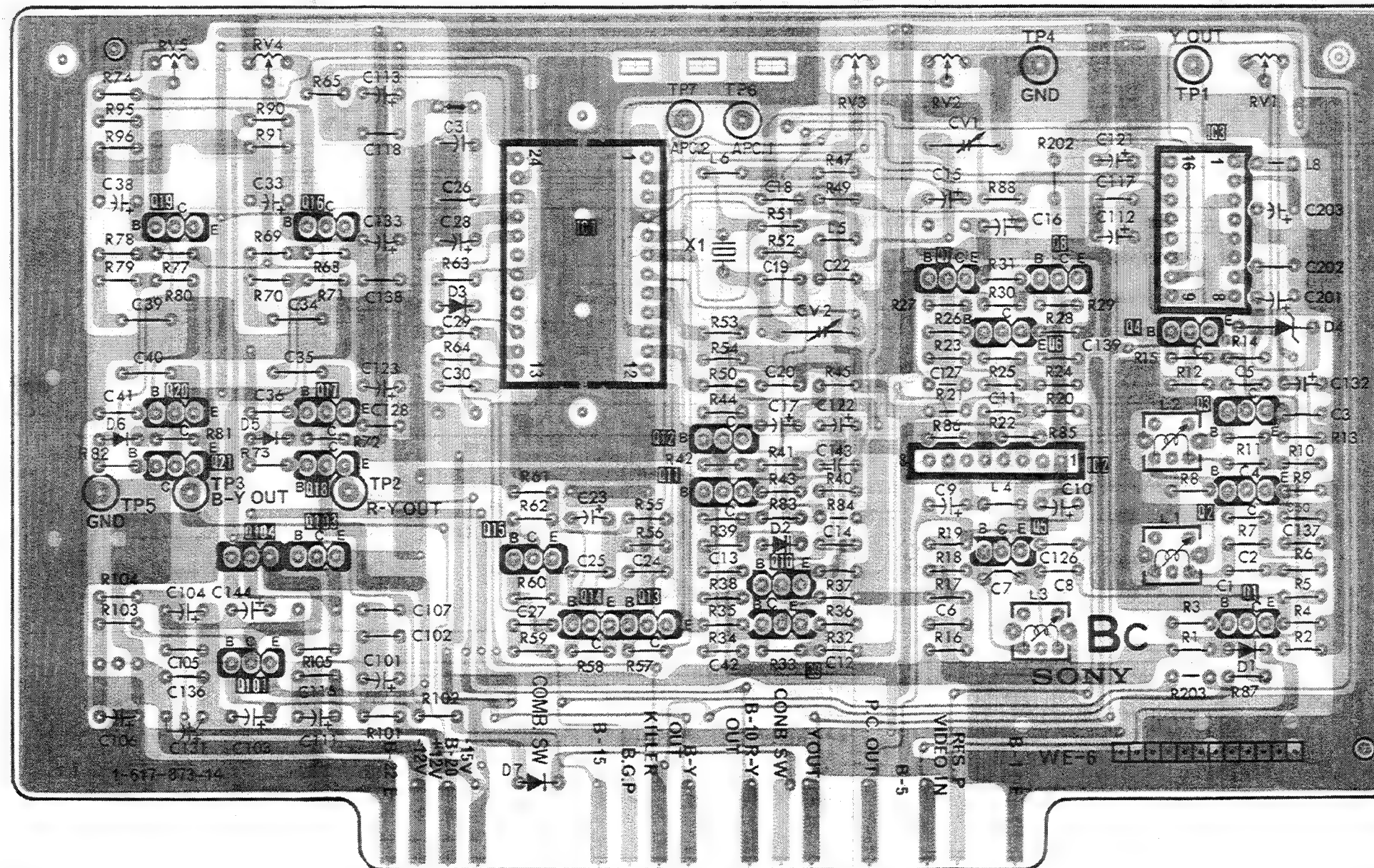
BT BT

(BVM-1916 ONLY)

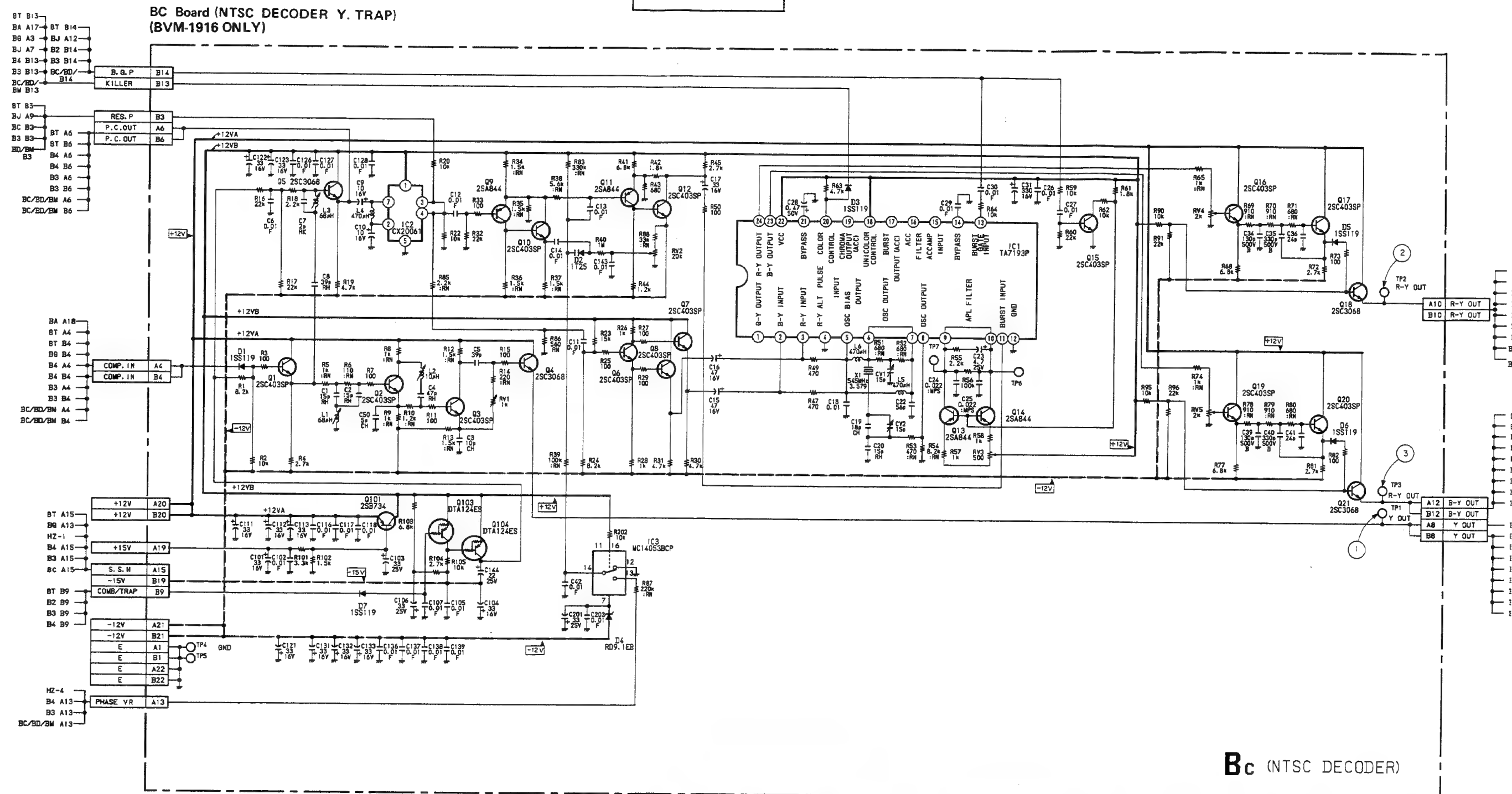


BC Board (NTSC DECODER Y. TRAP)
(BVM-1916 ONLY)

IC	1											2		3							
Q	19 20 21		16 17 18		15			12 11		10 9		7 6 5		8		4		3 2 1			
D	6		5		3			7		2		RV3		RV2		TP4		TP1		4	
TP	RV5		RV4					TP7		TP6		RV3		RV2		TP4		TP1		RV1	
ADJ	TP5		TP3		TP2						CV2		CV1								



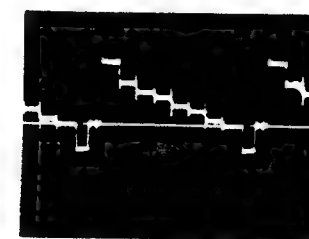
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.



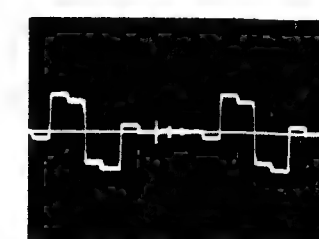
BC BOARD

IC1	TA7193P	DEMOMULATOR
2	CX20061	RESIDUAL SWITCH
3	MC14053BCP	ANALOG SWITCH
Q1	2SC403SP	BUFF.
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECT
4	2SC3068	BUFF.
5	2SC3068	BUFF.
6	2SC403SP	AMP.
7	2SC403SP	BUFF.
8	2SC403SP	BUFF.
9	2SA844	PHASE CONTROL
10	2SC403SP	PHASE CONTROL
11	2SA844	PHASE CONTROL
12	2SC403SP	PHASE CONTROL
13	2SA844	APL FILTER

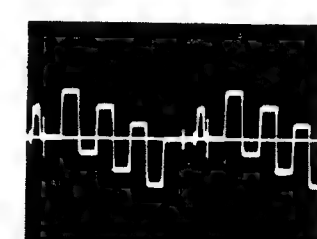
14	2SA844	APL FILTER
15	2SC403SP	APL FILTER
16	2SC403SP	LOW PASS FILTER
17	2SC403SP	LOW PASS FILTER
18	2SC3068	BUFF.
19	2SC403SP	LOW PASS FILTER
20	2SC403SP	LOW PASS FILTER
21	2SC3068	BUFF.
101	2SB734	SYSTEM SW.
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1T25	PHASE CONTROL
3	1SS119	KILLER SWITCH
4	RD9.1EB3	SWITCH BIAS.
5	1SS119	SYSTEM SWITCH
6	1SS119	SYSTEM SWITCH
7	1SS119	PROTECTOR



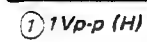
① 1Vp-p (H)



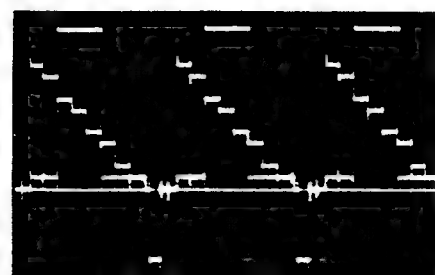
② 0.3Vp-p (H)



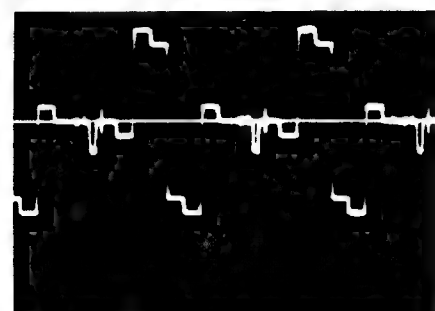
③ 0.36 Vp-p (H)



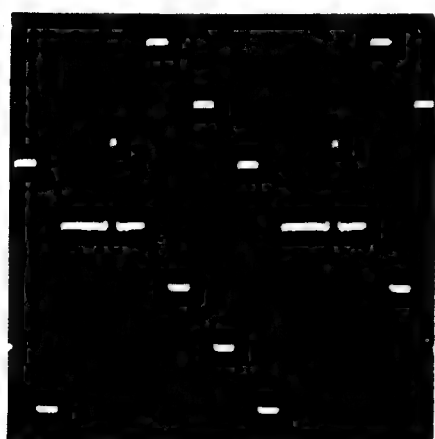
BD board (PAL DECODER Y-TRAP)
(BVM-2016P ONLY)



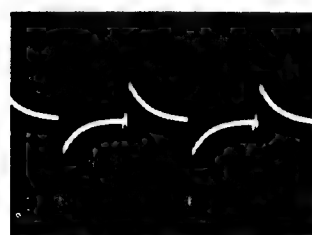
① 1Vp-p (H)



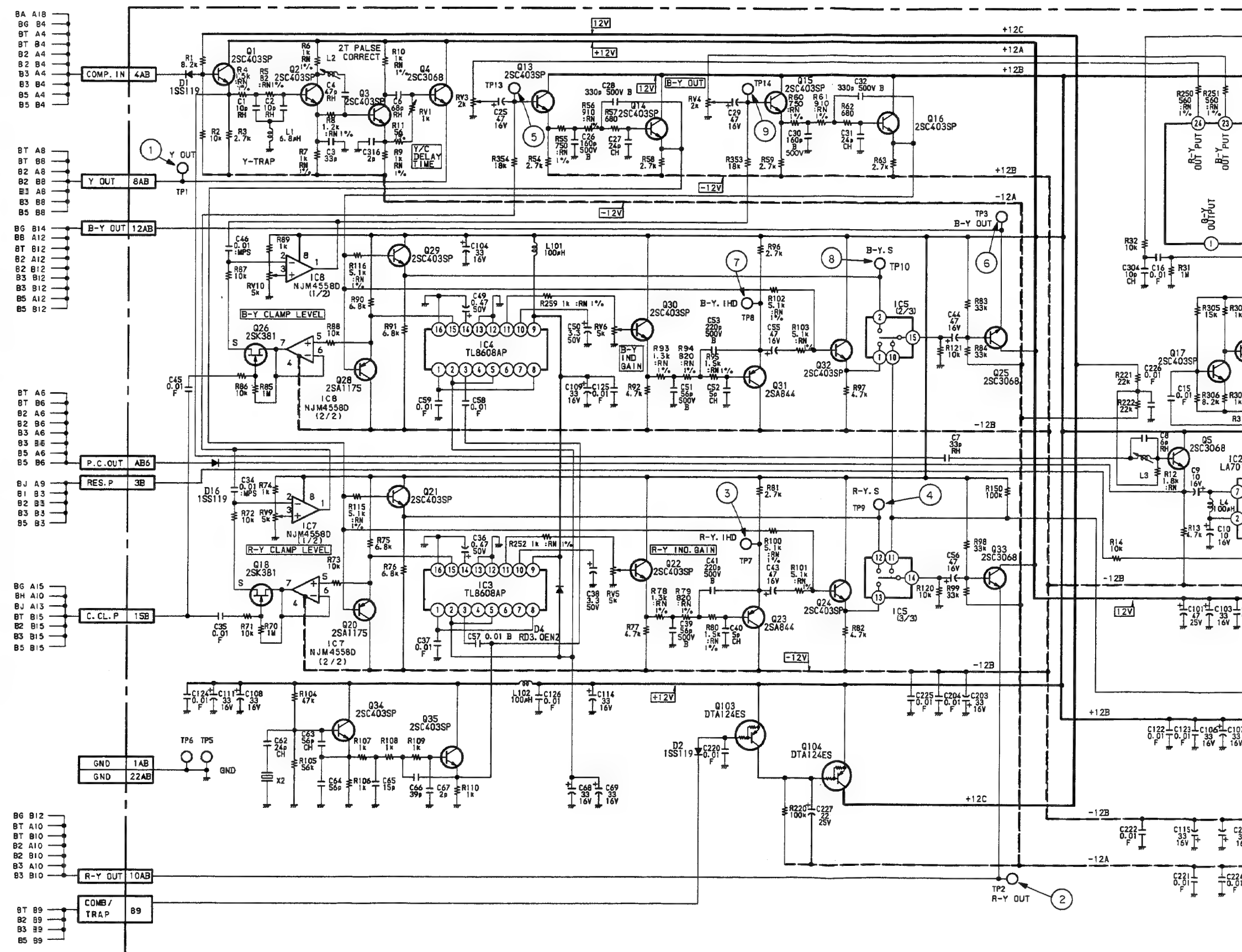
② 0.3Vp-p
③ 0.32Vp-p



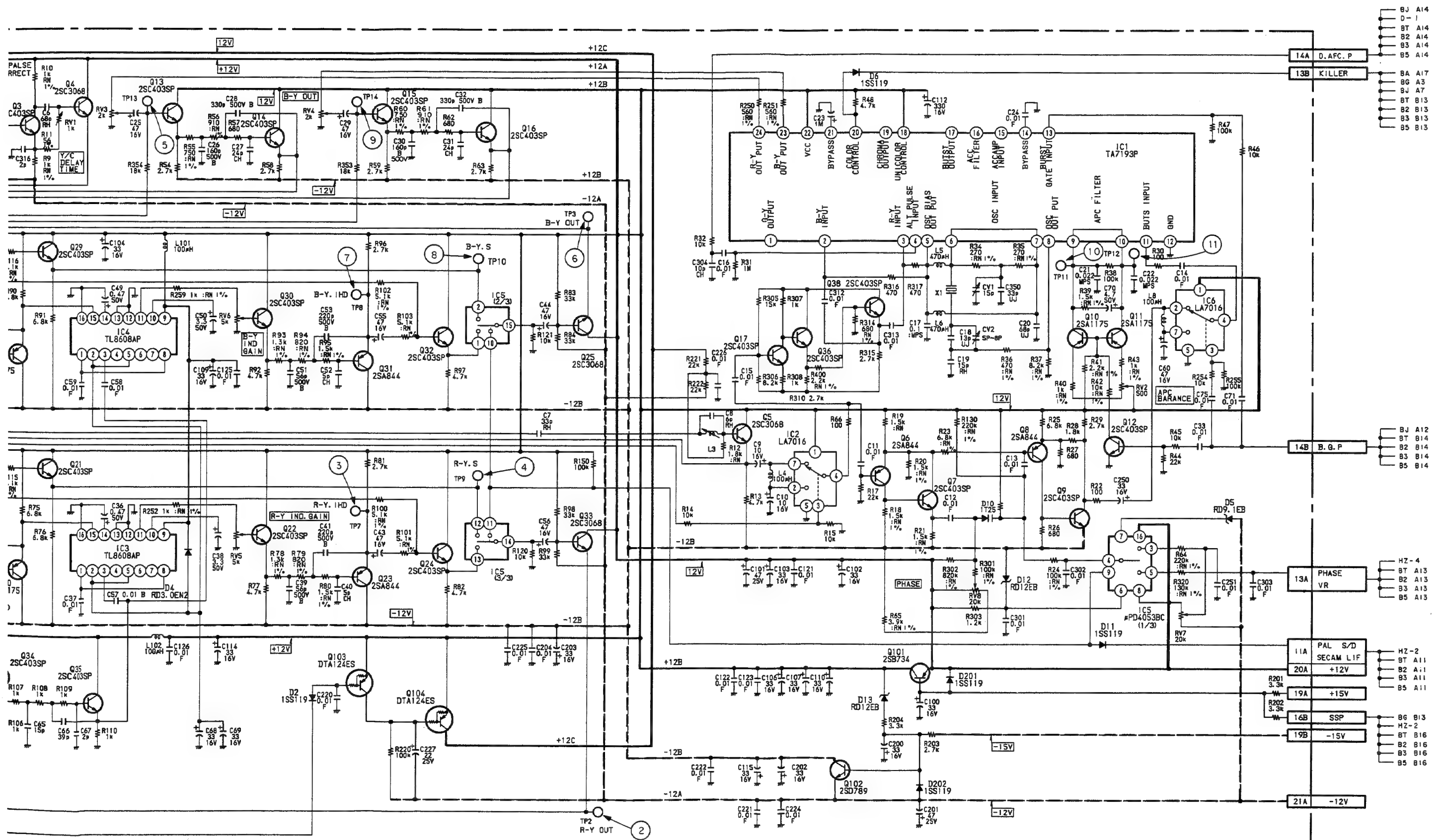
④ 0.32Vp-p
⑤ 0.36Vp-p
⑥ 0.38Vp-p
⑦ 0.38Vp-p



⑧ 0.39Vp-p
⑨ 0.42Vp-p
⑩ 0.26Vp-p (H)
⑪ 0.26Vp-p (H)

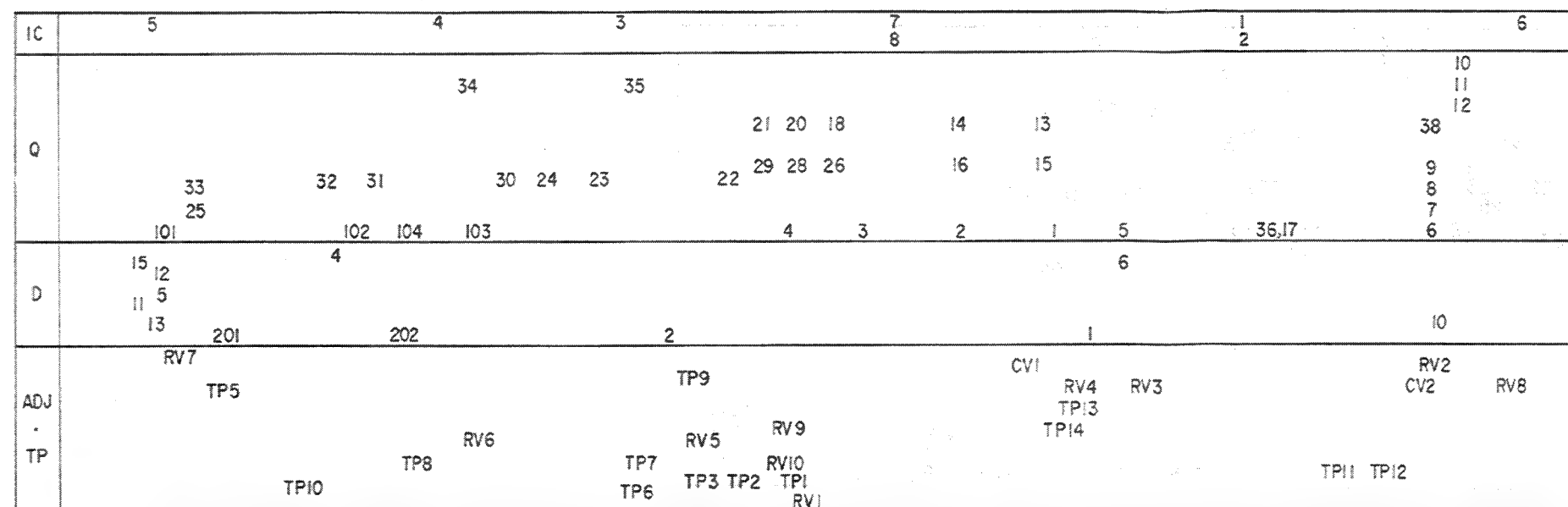


BD BD



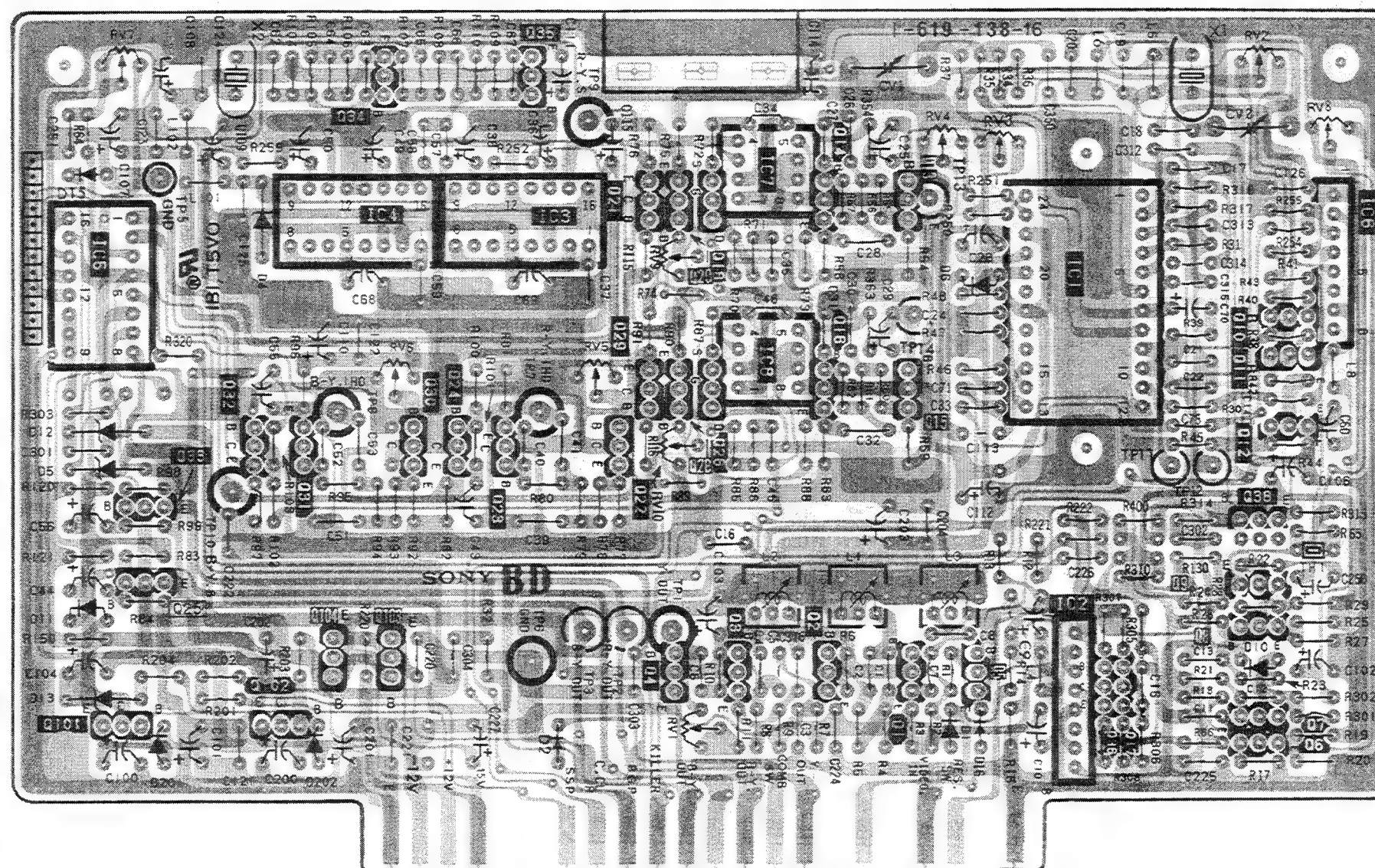
B_D (PAL DECODER Y. TRAP)

BD board (PAL DECODER Y. TRAP)
(BVM-2016P ONLY)



BD BOARD

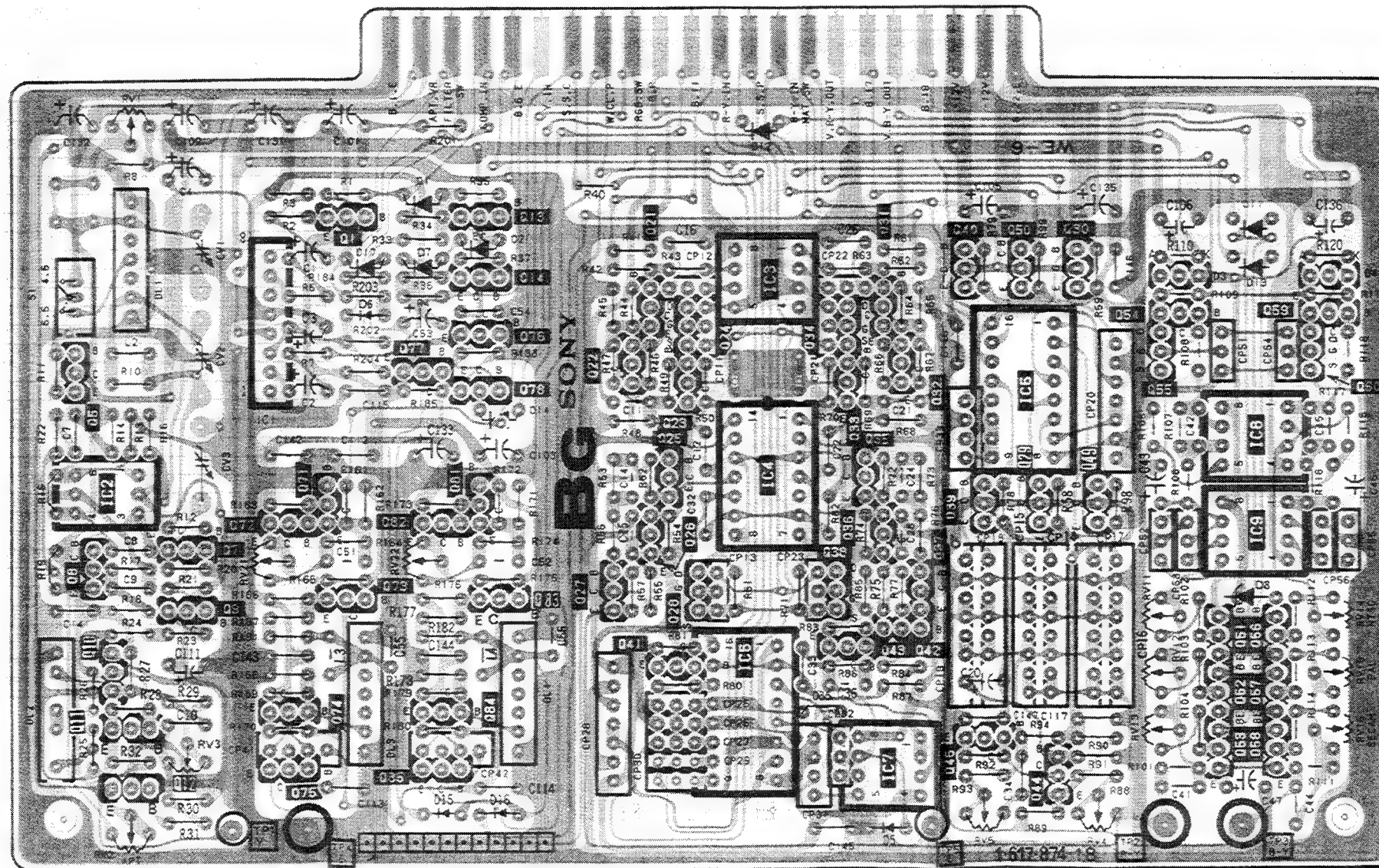
101	TA7193P	PAL DEMODULATOR
2	LA7016	RESIDUAL SWITCH
3	TL8608P	1H DELAY LINE
4	TL8608P	1H DELAY LINE
5	MC14053BCP	ANALOG SWITCHER
6	LA7016	BURST GATE
7	NJM4558P	R-Y CLAMP
8	NJM4558P	B-Y CLAMP
Q1	2SC403SP	BUFFER
2	2SC403SP	ACTIVE FILTER
3	2SC403SP	Y-DELAY CORRECTOR
4	2SC3068	BUFFER
5	2SC3068	BUFFER
6	2SA844	PHASE CONTROLLER
7	2SC403SP	PHASE CONTROLLER
8	NJM4558P	PHASE CONT. AMP.
9	NJM4558P	PHASE CONT. AMP.
10	2SA1175	APL FILTER
11	2SA1175	APL FILTER
12	2SC403SP	APL FILTER SWITCH
13	2SC403SP	R-Y L.P.F
14	2SC403SP	R-Y L.P.F
15	2SC403SP	B-Y L.P.F
16	2SC403SP	B-Y L.P.F
17	2SC403SP	AMPLIFIER
18	2SK381	R-Y CLAMP
20	2SA1175	BUFFER
21	2SC403SP	BUFFER
22	2SC403SP	CCD OUT L.P.F
23	2SA844	CCD OUT L.P.F
24	2SC403SP	BUFFER
25	2SC3068	BUFFER
26	2SK381	B-Y CLAMP
28	2SA1175	BUFFER
29	2SC403SP	BUFFER
30	2SC403SP	CCD OUT L.P.F
31	2SA844	CCD OUT L.P.F
32	2SC403SP	BUFFER
33	2SC3068	BUFFER
34	2SC403SP	CCD CLOCK GEN
35	2SC403SP	CCD CLOCK GEN
36	2SC403SP	BUFFER
38	2SC403SP	BUFFER
101	2SB734	SYSTEM SWITCH
102	2SD789	SYSTEM SWITCH
103	DTA124ES	COMB. SWITCH
104	DTA124ES	COMB. SWITCH
D1	1SS119	SYSTEM SWITCH
2	1SS119	COMB. SWITCH
4	RD3.0EB1	CCD BIAS
5	RD9.1EB2	SWITCH BIAS
6	1SS119	KILLER SWITCH
10	1T25	PHASE CONTROL
11	1SS119	PAL S/D SWITCH
12	RD12EB2	PHASE SWITCH
13	RD12EB2	SYSTEM SWITCH
16	1SS119	COMB SW
201	1SS119	PROTECTOR
202	1SS119	PROTECTOR





BG BG

BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL, Y, DELAY, NTSC MATRIX SW, G-Y MATRIX AMP)

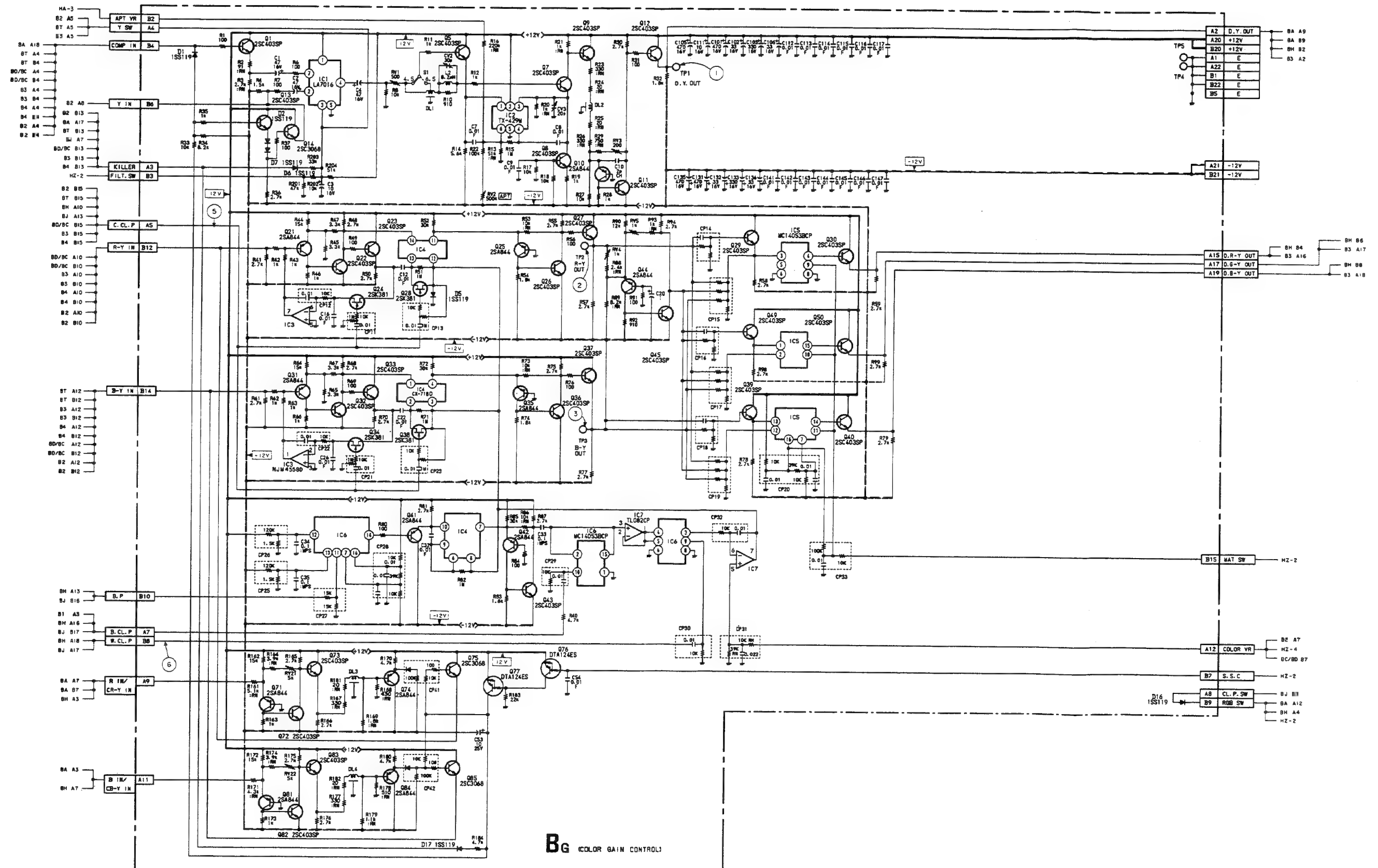
IC	<div style="display: flex; justify-content: space-between;"> 1 3 4 6 7 5 </div>															
Q	<div style="display: flex; justify-content: space-between;"> 5 8 7 72 71 77 13 14 76 81 21 22 23 24 25 26 27 28 34 31 32 33 35 36 37 38 40 42 43 44 45 49 50 </div>															
D	<div style="display: flex; justify-content: space-between;"> 17 6 7 15 16 1 2 5 </div>															
TP ADJ	<div style="display: flex; justify-content: space-between;"> RV1 CV2 CV3 RV3 RV21 RV22 RV11 RV12 RV13 TP5 RV5 RV4 TP2 TP3 RV14 RV15 RV16 </div>															

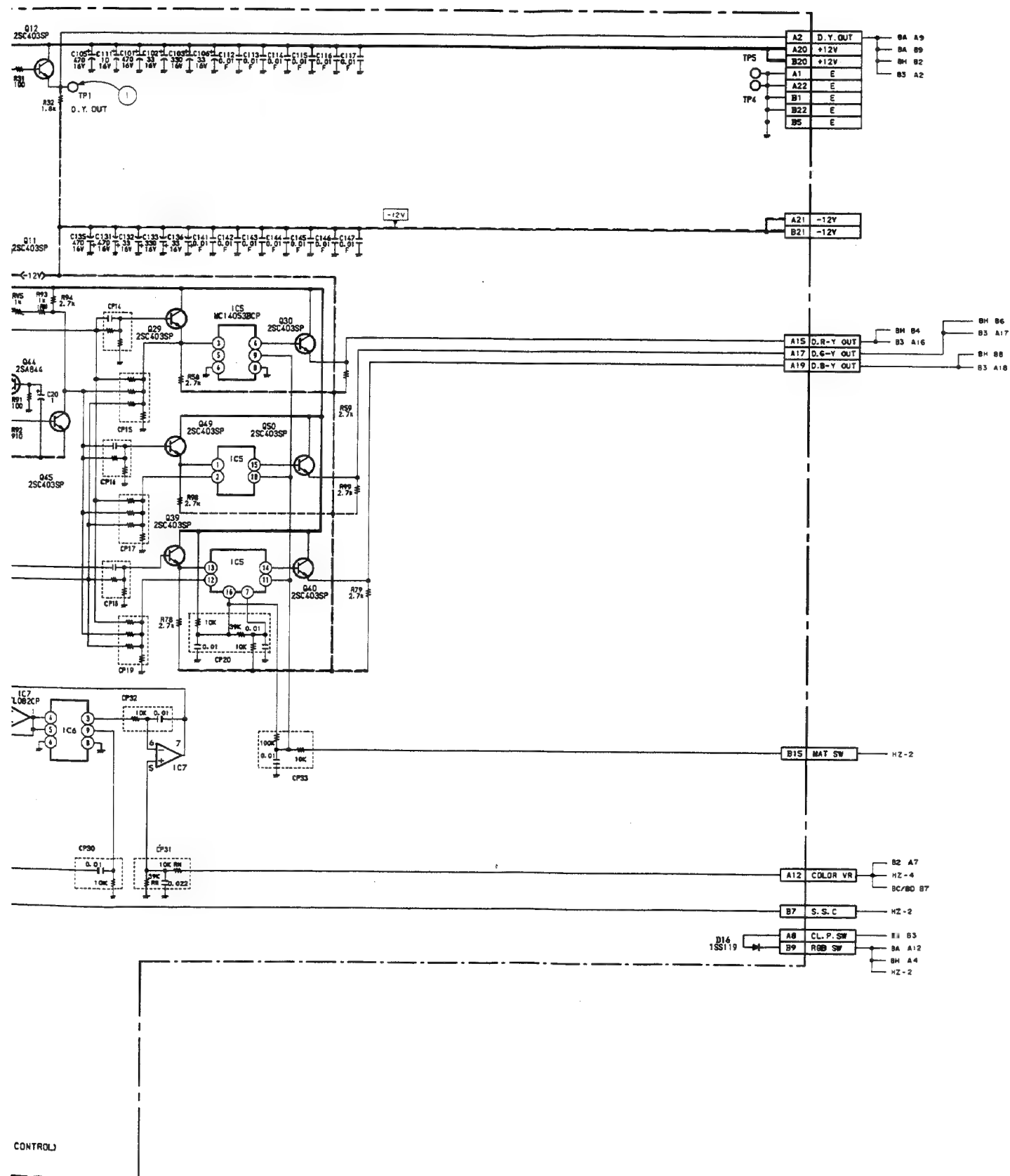


-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

BG BG

BG board (COLOR GAIN CONTROL, COMPONENT R-Y AMP & DELAY, APERTURE CONTROL, Y, DELAY, NTSC MATRIX SW, G-Y MATRIX AMP)

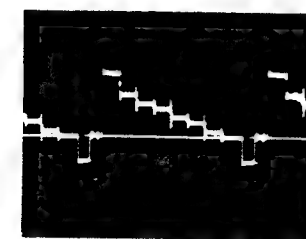




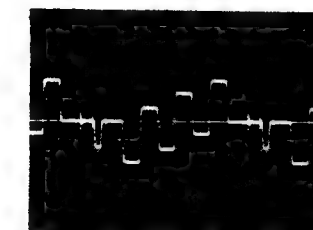
BG BOARD

IC1	LA7016	FILTER SW
2	TX-429M	APERTURE
3	NJM4558D	COLOR DIFFERENCE CLAMP
4	CX-718D	CHROMA CONTROL
5	MC14053BCP	MATRIX SW
6	MC14053BCP	CHROMA CONTROL
7	TL082CP	CHROMA CONTROL
8	TL082CP	VECTOR OUTPUT
9	TL082CP	VECTOR OUTPUT
Q1	2SC403SP	BUFF
5	2SC403SP	APERTURE
7	2SC403SP	APERTURE
8	2SC403SP	APERTURE
9	2SC403SP	Y DELAY
10	2SA844	Y AMP
11	2SC403SP	Y AMP
12	2SC403SP	Y AMP
13	2SC403SP	BUFF
14	2SC3068	BUFF
21	2SA844	R-Y AMP
22	2SC403SP	R-Y AMP
23	2SC403SP	R-Y CLAMP
24	2SK381	R-Y CLAMP
25	2SA844	R-Y CHROMA CONTROL
26	2SC403SP	R-Y CHROMA CONTROL
27	2SC403SP	R-Y CHROMA CONTROL
28	2SK381	R-Y CHROMA CONTROL
29	2SC403SP	R-Y BUFF
30	2SC403SP	R-Y BUFF
31	2SA844	B-Y AMP
32	2SC403SP	B-Y AMP
33	2SC403SP	B-Y CLAMP
34	2SK381	B-Y CLAMP
35	2SA844	B-Y CHROMA CONTROL
36	2SC403SP	B-Y CHROMA CONTROL
37	2SC403SP	B-Y CHROMA CONTROL
38	2SK381	B-Y CHROMA CONTROL
39	2SC403SP	B-Y BUFF
40	2SC403SP	B-Y BUFF
41	2SA844	CHROMA CONTROL
42	2SA844	CHROMA CONTROL
43	2SC403SP	CHROMA CONTROL

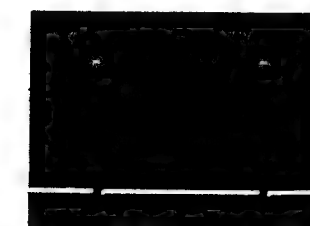
Q44	2SA844	CHROMA CONTROL
45	2SC403SP	CHROMA CONTROL
49	2SC403SP	G-Y BUFF
50	2SC403SP	G-Y BUFF
51	DTA124ES	GAIN CHANGE SW
52	DTA124ES	GAIN CHANGE SW
53	DTA124ES	GAIN CHANGE SW
54	2SC403SP	R-Y BUFF
55	2SK381	R-Y CLAMP
56	DTA124ES	GAIN CHANGE SW
57	DTA124ES	GAIN CHANGE SW
58	DTA124ES	GAIN CHANGE SW
59	2SC403SP	B-Y BUFF
60	2SK381	B-Y CLAMP
71	2SA844	R-Y AMP
72	2SC403SP	R-Y AMP
73	2SC403SP	R-Y AMP
74	2SA844	R-Y DELAY
75	2SC3068	R-Y BUFF
76	DTA124ES	COMPONENT SW
77	DTA124ES	COMPONENT SW
78	DTA124ES	COMPONENT SW
81	2SA844	B-Y AMP
82	2SC403SP	B-Y AMP
83	2SC403SP	B-Y AMP
84	2SA844	B-Y DELAY
85	2SC3068	B-Y BUFF
D1	1SS119	COMPONENT SW
2	1SS119	DC SHIFT SW
3	MC932	PROTECT
4	MC932	PROTECT
5	1SS119	PROTECT
6	1SS119	DC SHIFT
7	1SS119	FILTER SW
8	RD6 2E-B2	+6V REG
11	1SS119	GAIN CHANGE SW
12	1SS119	GAIN CHANGE SW
13	1SS119	GAIN CHANGE SW
14	1SS119	GAIN CHANGE SW
16	1SS119	R.G.B. SW
17	1SS119	KILLER



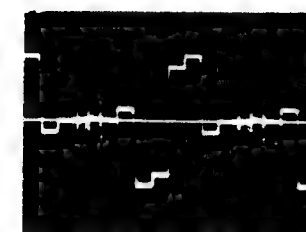
① 1.0Vp-p (H)



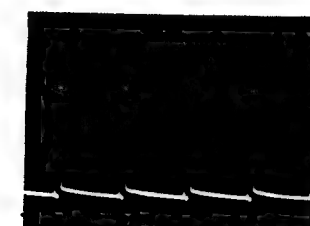
③ 1.7Vp-p (H)



⑤ 4.8Vp-p (H)



② 1.4Vp-p (H)



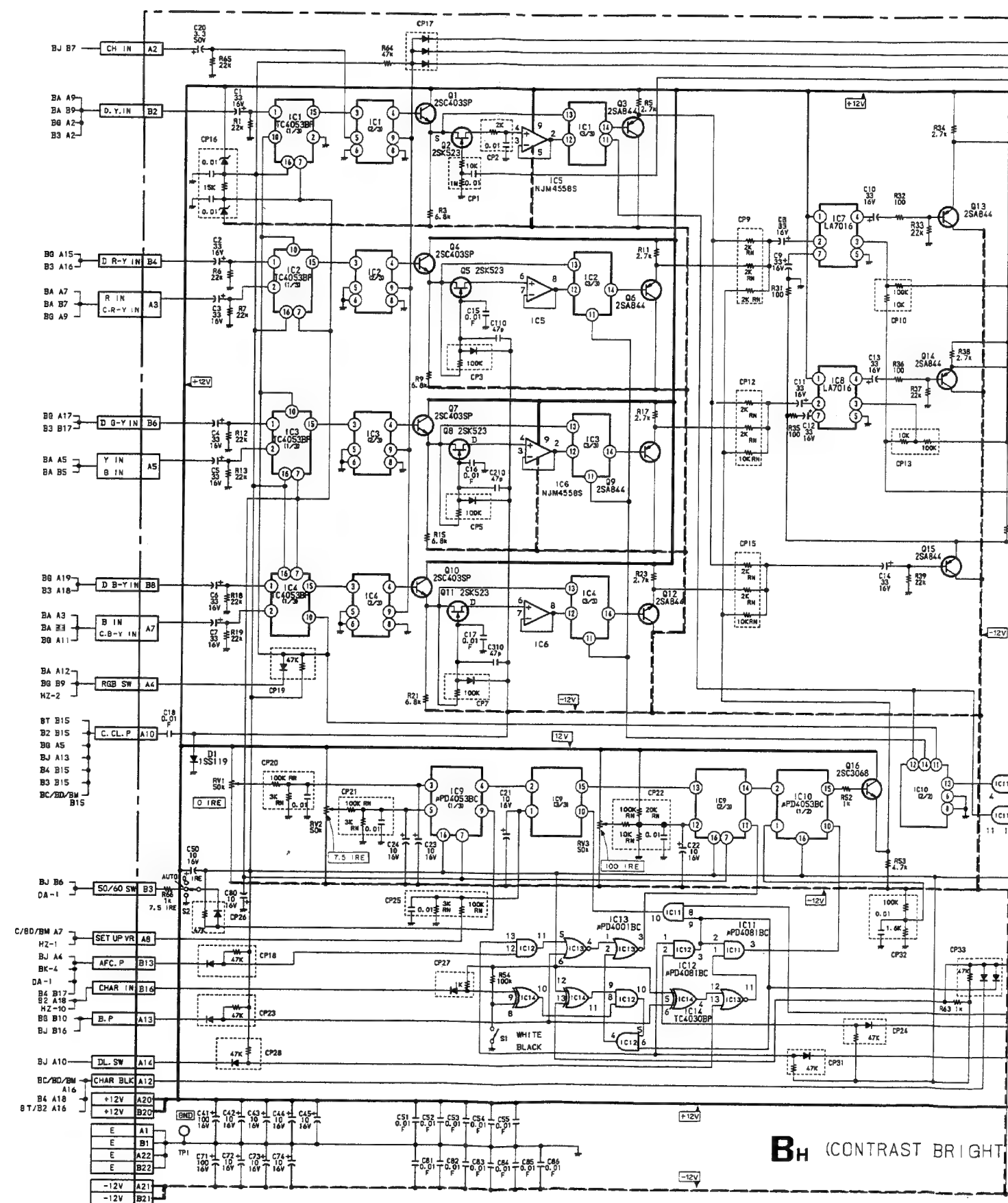
⑥ 12Vp-p (H)

BH BOARD

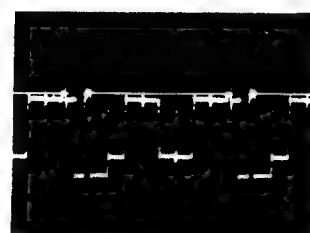
1C1(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)	TC4053BP	SET UP & CROSS HATCH SW
(3/3)	TC4053BP	SCREENING SW
2(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)	TC4053BP	SET UP SW
(3/3)	TC4053BP	SCREENING SW
3(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)	TC4053BP	SET UP SW
(3/3)	TC4053BP	SCREENING SW
4(1/3)	TC4053BP	COMPOSITE/R.G.B. CHANGE SW
(2/3)	TC4053BP	SET UP SW
(3/3)	TC4053BP	SCREENING SW
5	NJM4558S	SAMPLE HOLD
6	NJM4558S	SAMPLE HOLD
7	LA7016	BLUE ONLY SW
8	LA7016	BLUE ONLY SW
9	MC14053BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
10(1/2)	MC14053BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(2/2)	MC14053BCP	COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
11(1/4)	MC14081BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
(3/4)	MC14081BCP	COLOR DIFFERENCE & R.G.B. SCREENING PULSE GEN
(2/4)	MC14081BCP	Y SCREENING PULSE GEN
(4/4)	MC14081BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
12	MC14081BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
13	MC14001BCP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
14	TC4030BP	AGC PULSE, SET UP, WHITE, VITC INSERT GEN
101	TX-429M	R CONTRAST CONTROL
102	TL082CP	R CONTRAST & BRIGHT CONTROL
201	TX-429M	G CONTRAST CONTROL
202	TL082CP	G CONTRAST & BRIGHT CONTROL
301	TX-429M	B CONTRAST CONTROL
302	TL082CP	B CONTRAST & BRIGHT CONTROL
Q1	2SC403SP	Y BUFF
2	2SK523	Y SAMPLE HOLD
3	2SA844	Y BUFF
4	2SC403SP	R-Y/R BUFF

Q5	2SK523	R-Y/Y SAMPLE HOLD
6	2SA844	R-Y/R BUFF
7	2SC403SP	G-Y/R BUFF
8	2SK523	G-Y/Y SAMPLE HOLD
9	2SA844	G-Y/G BUFF
10	2SC403SP	B-Y/B BUFF
11	2SK523	B-Y/B SAMPLE HOLD
12	2SA844	B-Y/B BUFF
13	2SA844	R BUFF
14	2SA844	G BUFF
15	2SA844	B BUFF
16	2SC3068	AGC PULSE BUFF
101	2SK381	R CONTRAST CONTROL
102	2SA844	R AMP
103	2SC403SP	R AMP
104	2SC403SP	R LIMITER
105	2SC403SP	R LIMITER
106	2SK381	R BRIGHT CONTROL
107	2SK381	R CONTRAST CONTROL
108	2SK381	R CONTRAST CONTROL
201	2SK381	G CONTRAST CONTROL
202	2SA844	G AMP
203	2SC403SP	G AMP
204	2SC403SP	G LIMITER
205	2SC403SP	G LIMITER
206	2SK381	G BRIGHT CONTROL
207	2SK381	G CONTRAST CONTROL
208	2SK381	G CONTRAST CONTROL
301	2SK381	B CONTRAST CONTROL
302	2SA844	B AMP
303	2SC403SP	B AMP
304	2SC403SP	B LIMITER
305	2SC403SP	B LIMITER
306	2SK381	B BRIGHT CONTROL
307	2SK381	B CONTRAST CONTROL
308	2SK381	B CONTRAST CONTROL
D1	1SS119	
101	1SS119	R LIMITER
102	1SS119	R PROTECT
201	1SS119	G LIMITER
202	1SS119	G PROTECT
301	1SS119	B LIMITER
302	1SS119	B PROTECT

BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)



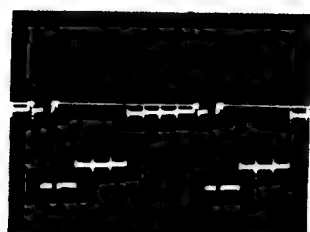
BH (CONTRAST BRIGHT)



① 1.2Vp-p (H)



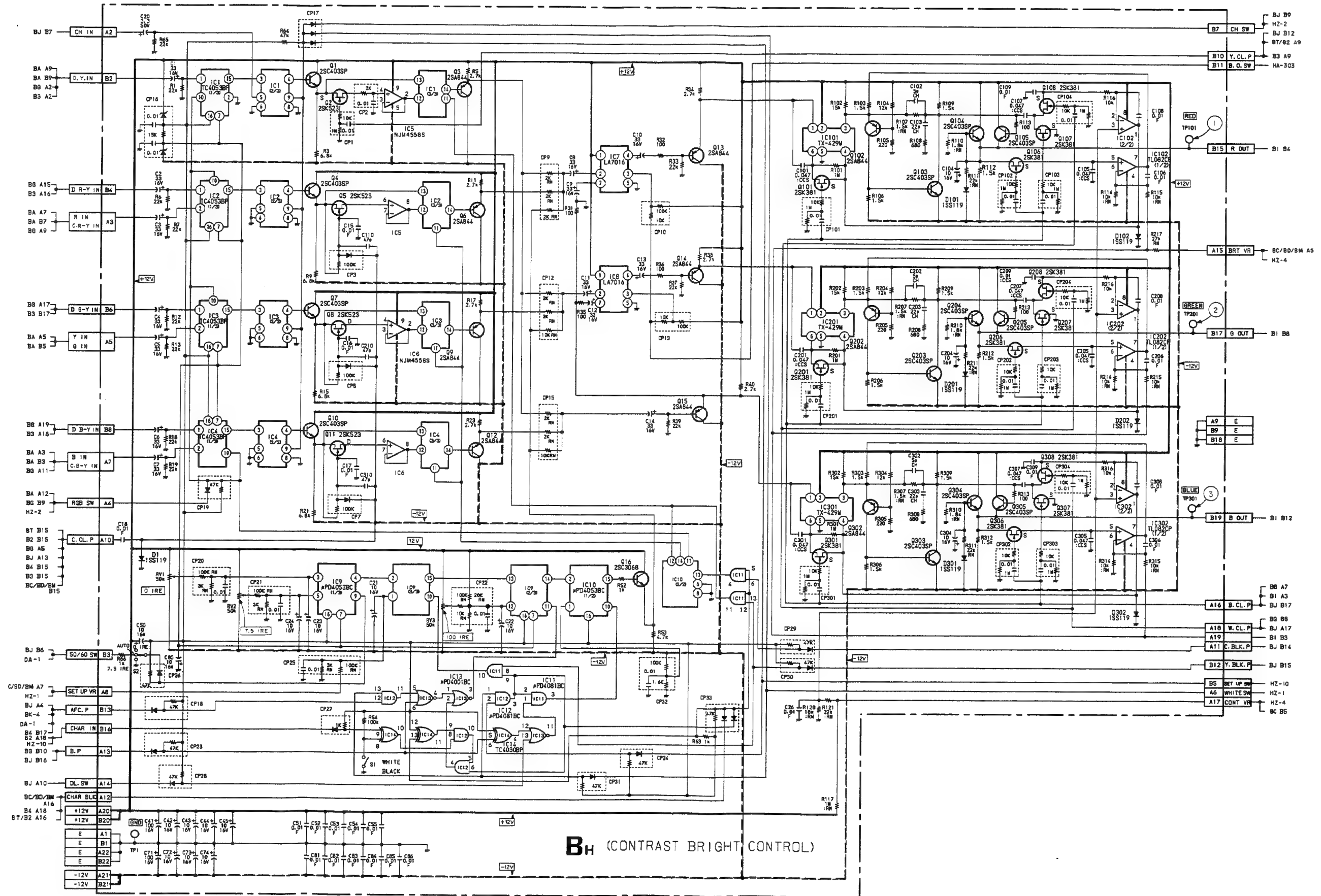
③ 1.2Vp-p (H)



② 1.2Vp-p (H)

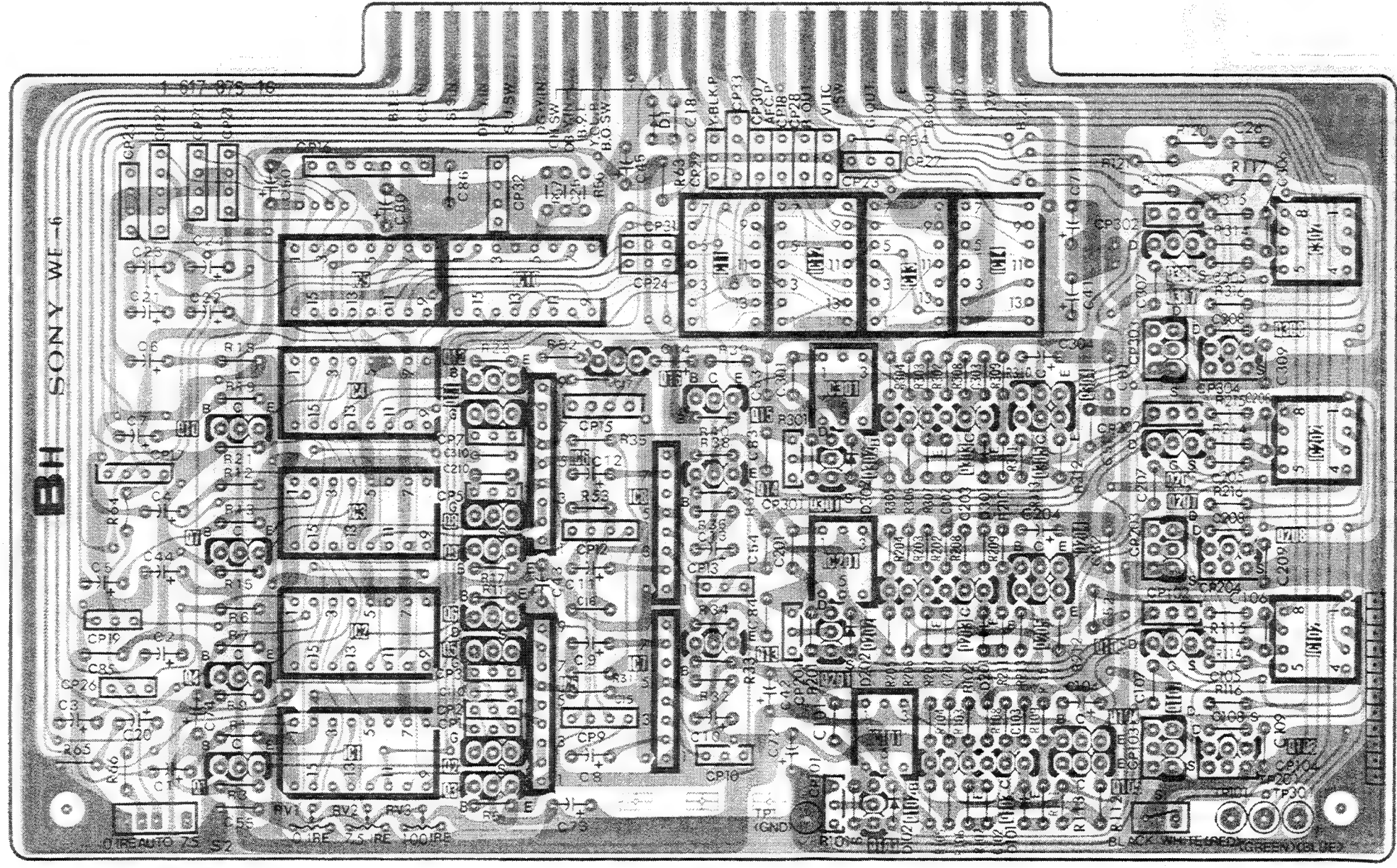
BH BH

BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)



BH board (Y/COLOR DIFFERENCE/RGB SIGNAL SWITCHING, Y-C MATRIX, CONTRAST/BRIGHTNESS CONTROL)

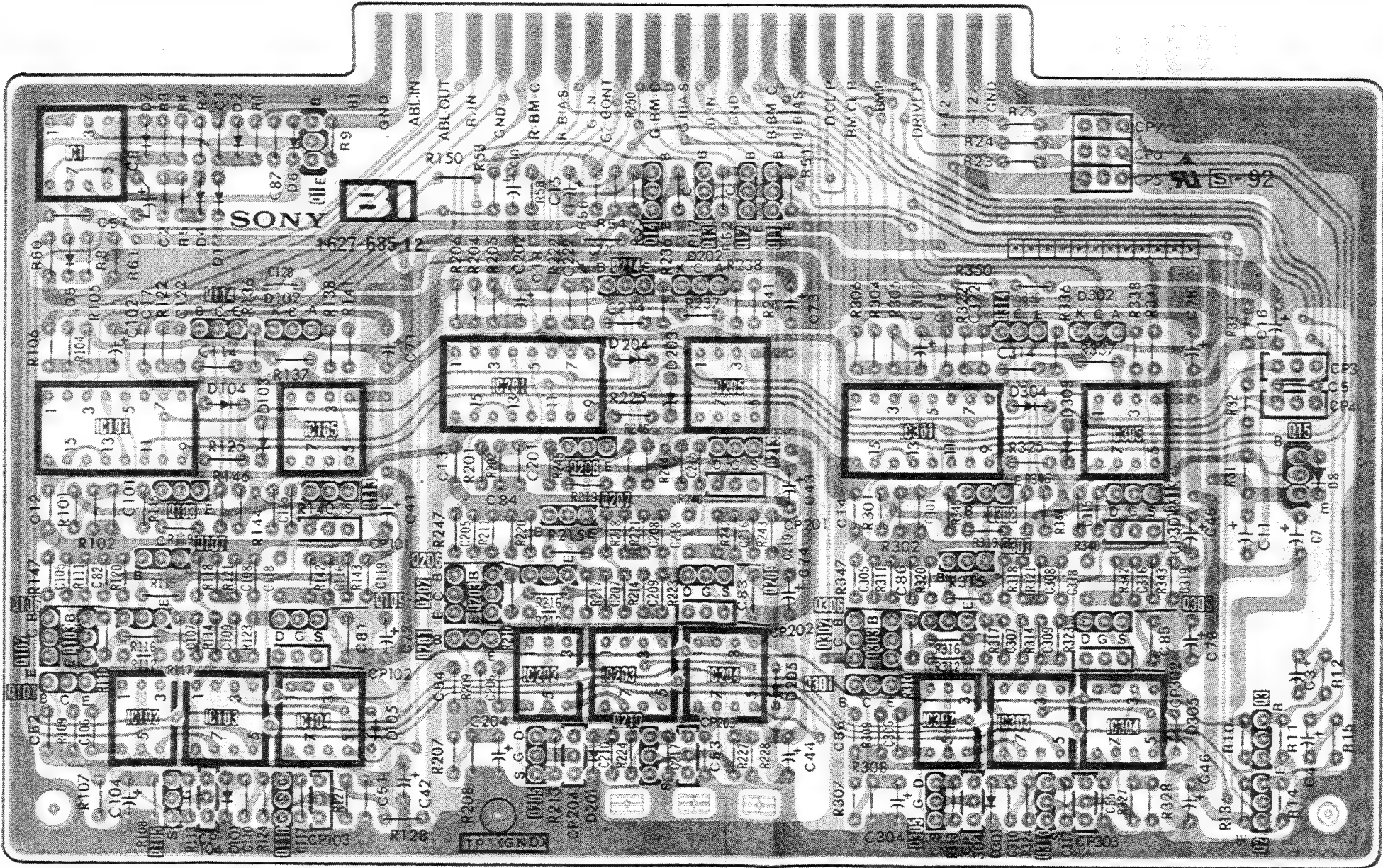
IC		9 4 3 2 1		10 6 5		11 8 7		12 301 201 101		13		14		102 202 302
Q	10 7 4 1		12 11 8 9 6 5 2 3		16		15 14 13		301 201 101	302 202 102	303 203 103	304 305 204 205 104 105		306 307 206 207 106 107 108
D						1			302 202 102		301 201 101			
TP ADJ			RV1 RV2 RV3					TP1						TP201 TP101 TP301



• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

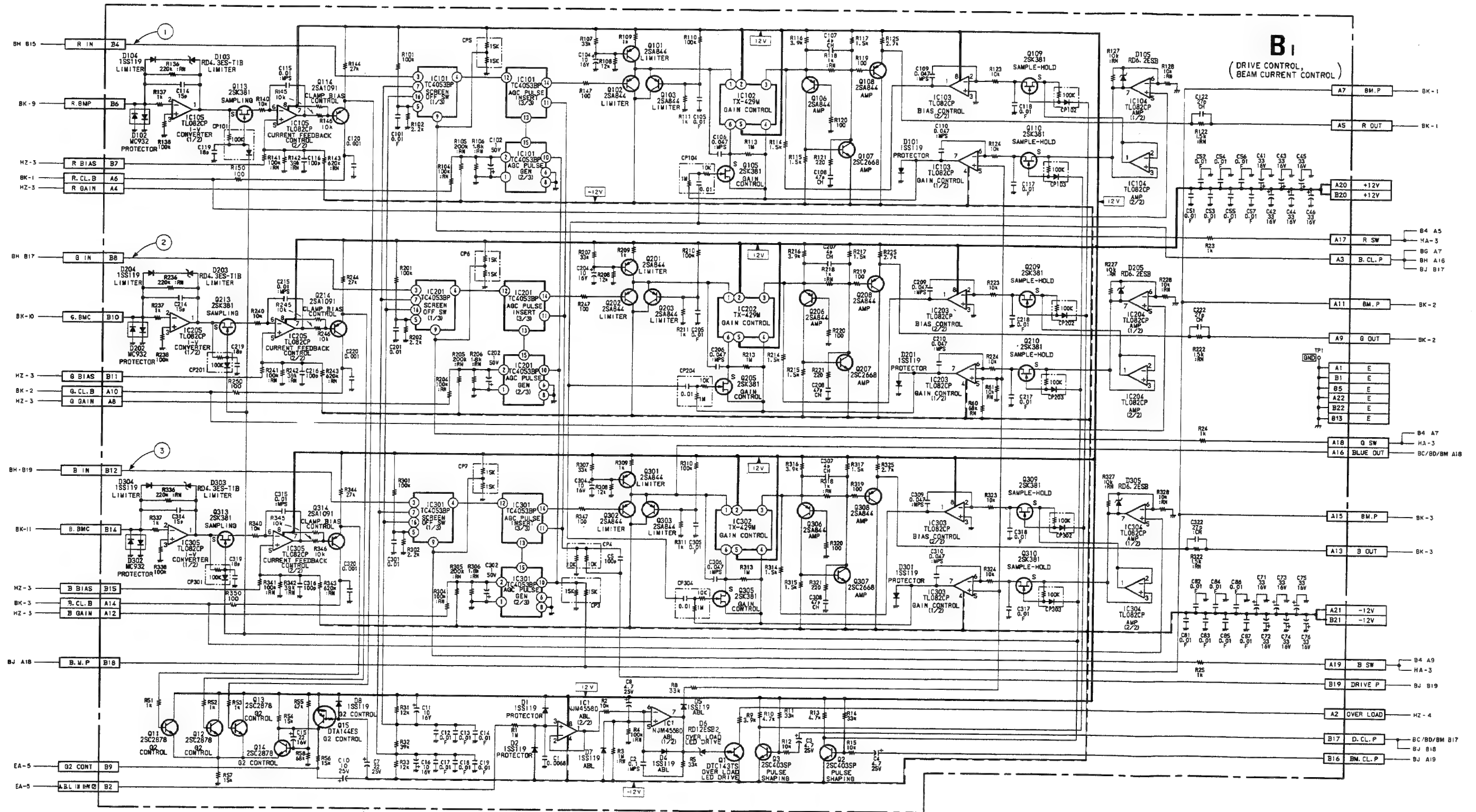
BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)

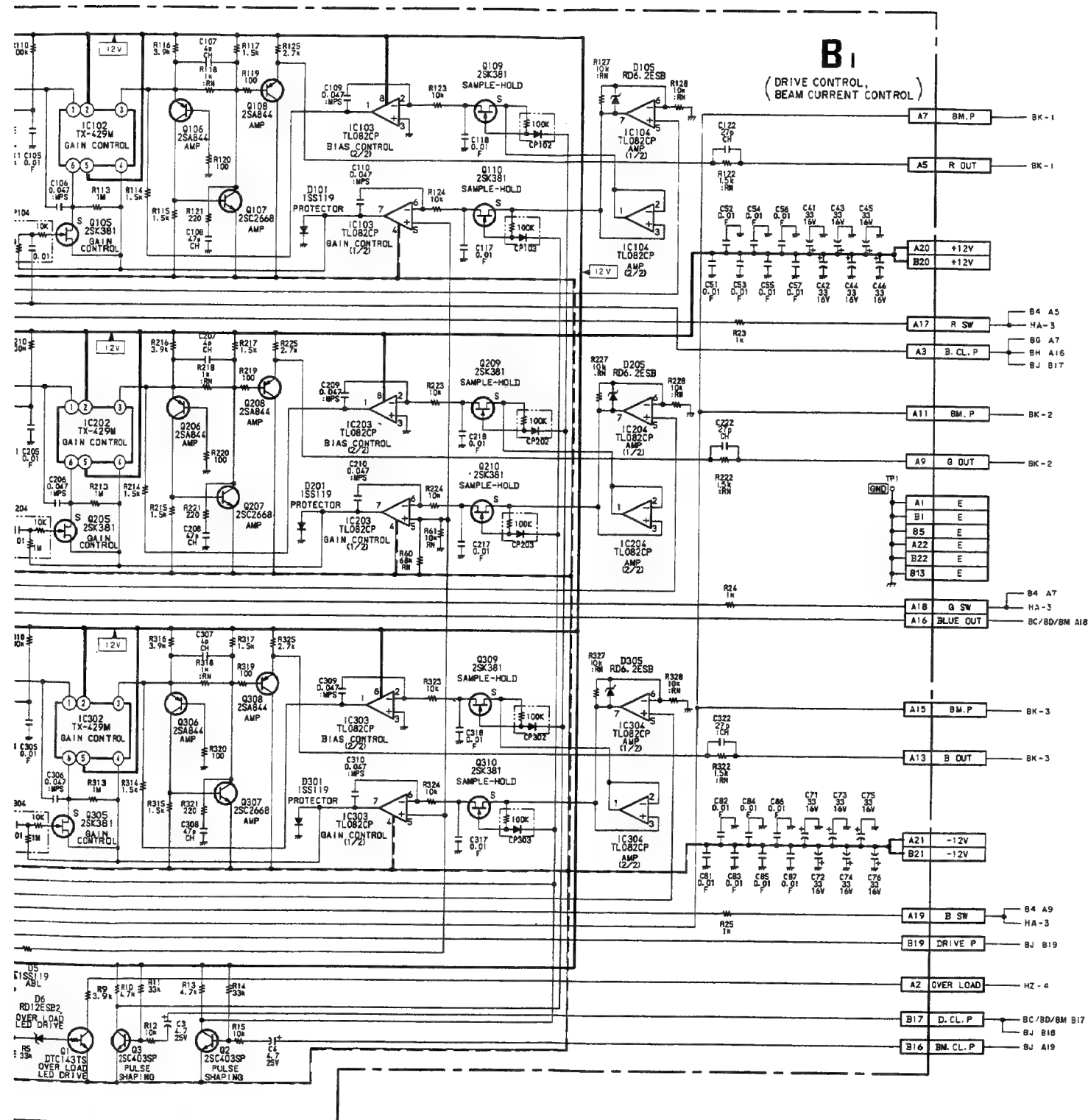
IC	101	105	201	205	301	305				
	102	103	104	202	203	204	302	303	304	
Q		114	113	214	14	13	12	11		
	108			208			213			
	107	109		207	209			314	313	15
	102	103	106	202	203	206		308		
	101		105	201	205	210	302	303	306	3
							301	305	307	2
								309		
									</	



• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

BI board (DRIVE CONTROL, BEAM CURRENT CONTROL)





BI BOARD

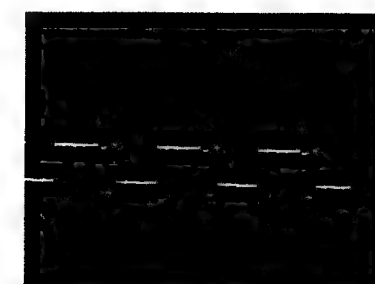
IC1	NJM4558D	ABL
101(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
102	TX-429M	GAIN CONTROL
103(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
104	TL082CP	AMP
105(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
201(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
202	TX-429M	GAIN CONTROL
203(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
204	TL082CP	AMP
205(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL
301(1/3)	TC4053BP	SCREEN OFF SW
(2/3)		AGC PULSE GEN
(3/3)		AGC PULSE INSERT
302	TX-429M	GAIN CONTROL
303(1/2)	TL082CP	GAIN CONTROL
(2/2)		BIAS CONTROL
304	TL082CP	AMP
305(1/2)	TL082CP	I-V CONVERTER
(2/2)		CURRENT FEEDBACK CONTROL

Q110	2SK381	SAMPLE-HOLD
113	2SK381	SAMPLING
114	2SA1091	CLAMP BIAS CONTROL
201	2SA844	LIMITER
202	2SA844	LIMITER
203	2SA844	LIMITER
205	2SK381	GAIN CONTROL
206	2SA844	AMP
207	2SC2668	AMP
208	2SA844	AMP
209	2SK381	SAMPLE-HOLD
210	2SK381	SAMPLE-HOLD
213	2SK381	SAMPLING
214	2SA1091	CLAMP BIAS CONTROL
301	2SA844	LIMITER
302	2SA844	LIMITER
303	2SA844	LIMITER
305	2SK381	GAIN CONTROL
306	2SA844	AMP
307	2SC2668	AMP
308	2SA844	AMP
309	2SK381	SAMPLE-HOLD
310	2SK381	SAMPLE-HOLD
313	2SK381	SAMPLING
314	2SA1091	CLAMP BIAS CONTROL

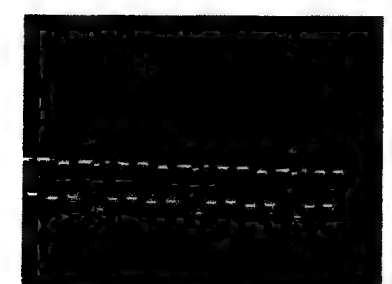
D1	1SS119	PROTECTOR
2	1SS119	PROTECTOR
4	1SS119	ABL
5	1SS119	ABL
6	RD12ESB2	OVER LOAD LED DRIVE
7	1SS119	ABL
8	1SS119	G2 CONTROL
101	1SS119	PROTECTOR
102	MC932	PROTECTOR
103	RD4.3ES-Y1B	LIMITER
104	1SS119	LIMITER
D105	RD6.2ESB	LIMITER
201	1SS119	PROTECTOR
202	MC932	PROTECTOR
203	RD4.3ES-Y1B	LIMITER
204	1SS119	LIMITER
D205	RD6.2ESB	LIMITER
301	1SS119	PROTECTOR
302	MC932	PROTECTOR
303	RD4.3ES-Y1B	LIMITER
304	1SS119	LIMITER
D305	RD6.2ESB	LIMITER



① 1.2 Vp-p(H)

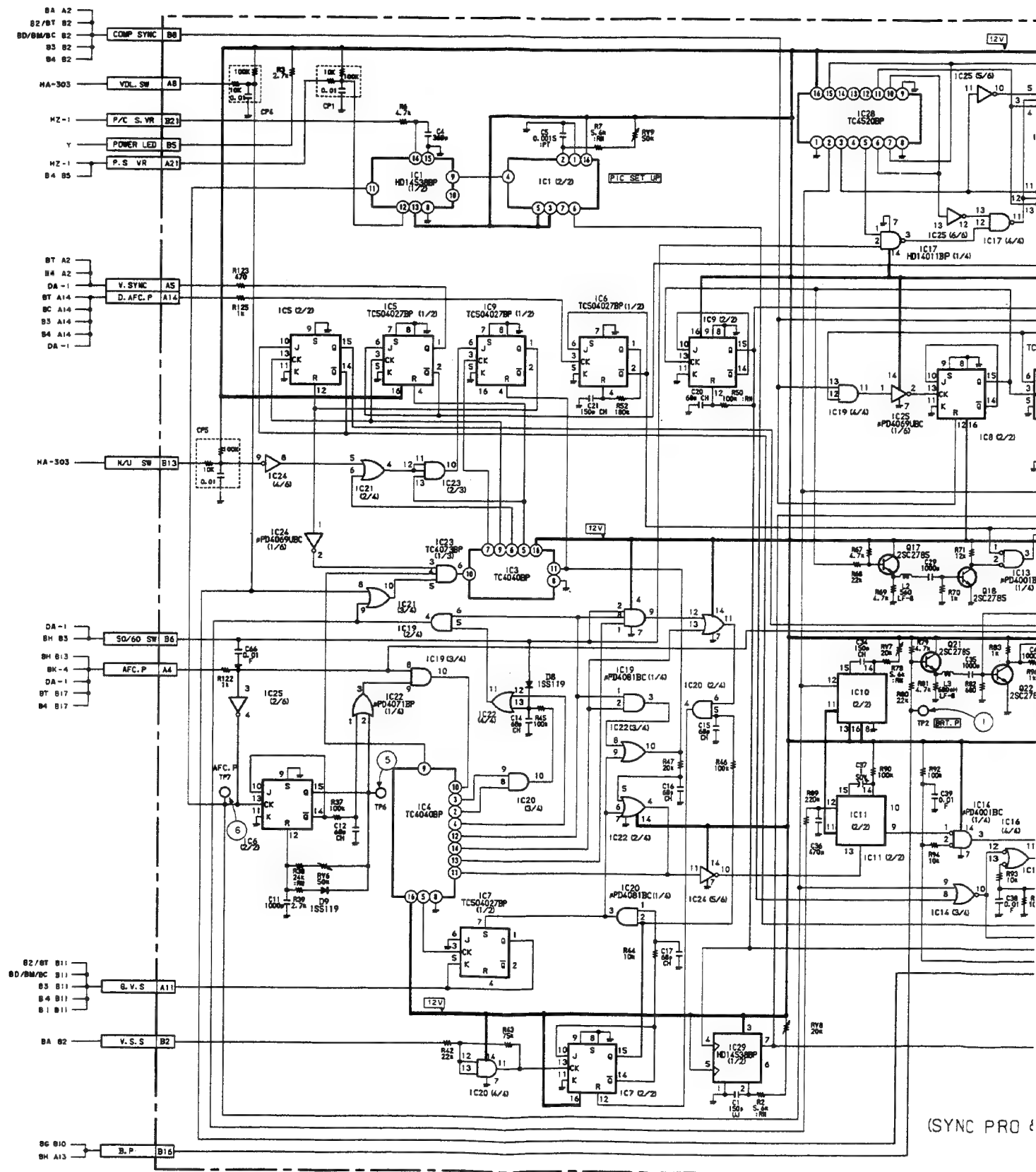


② 1.2 Vp-p(H)



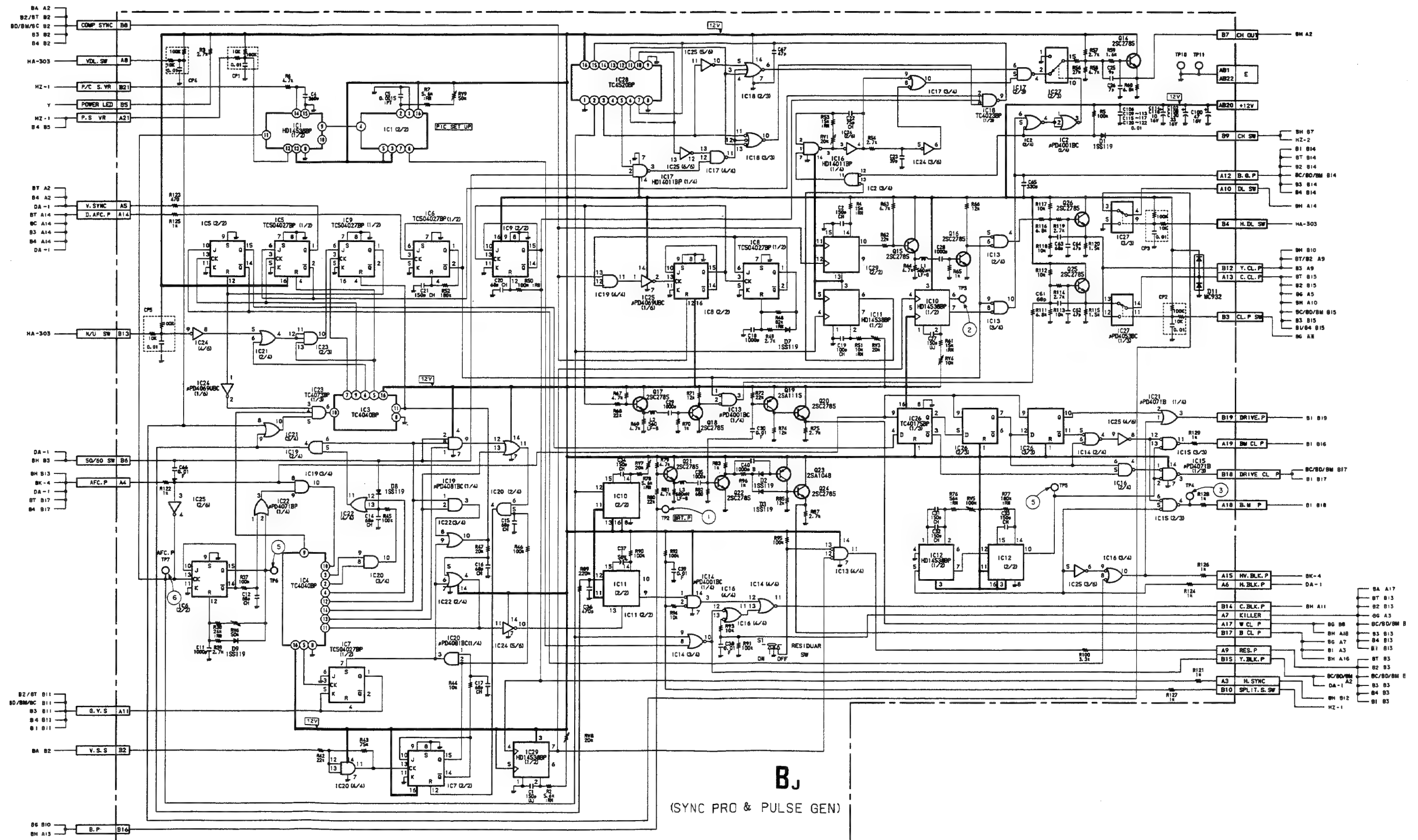
③ 1.2 Vp-p(H)

IC23(1/3)		
(2/3)	TC4073BP	V SYNC & DELAY
(3/3)		V COUNT
24(1/5)		V SYNC & DELAY
(4/5)	MC14069UBCP	CROSS HATCH GEN
(2/5)		V COUNT
(3/5)		1H PULSE PROCESS
(5/5)		INV
25(1/6)		H OR V BLK.P
(2/6)	MC14069UBCP	Y CYCLE AGC & CLAMP PULSE GEN
(3/6)		CROSS HATCH GEN
(4/6)		1H PULSE PROCESS
(5/6)	HC14175BCP	CLAMP PULSE CHANGE SW
(6/6)		CROSS HATCH GEN
26	MC14053BCP	H OR V DL SW
27(1/3)		CROSS HATCH GEN
(2/3)	TC4520BP	CROSS HATCH GEN
(3/3)		B.G.P GEN 1
28	HD14538BP	Y.CL.P GEN
29(1/2)		
(2/2)		
Q14	25C2785	CROSS HATCH GEN
15	25C2785	Y.CL.P GEN
16	25C2785	Y.CL.P GEN
17	25C2785	CHROMA CLAMP PULSE GEN
18	25C2785	CHROMA CLAMP PULSE GEN
19	25A1115	H CYCLE
20	25C2785	H CYCLE
21	25C2785	H CYCLE
22	25C2785	H CYCLE
23	25A1048	H CYCLE
24	25C2785	H CYCLE
25	25C2785	CHROMA CLAMP PULSE GEN
26	25C2785	Y.CL.P GEN
D1	15S119	CROSS HATCH GEN
2	15S119	H CYCLE
3	15S119	H CYCLE
7	15S119	1H PULSE PROCESS
8	15S119	V SYNC & DELAY
9	15S119	2H MULTI
11	MC932	PROT



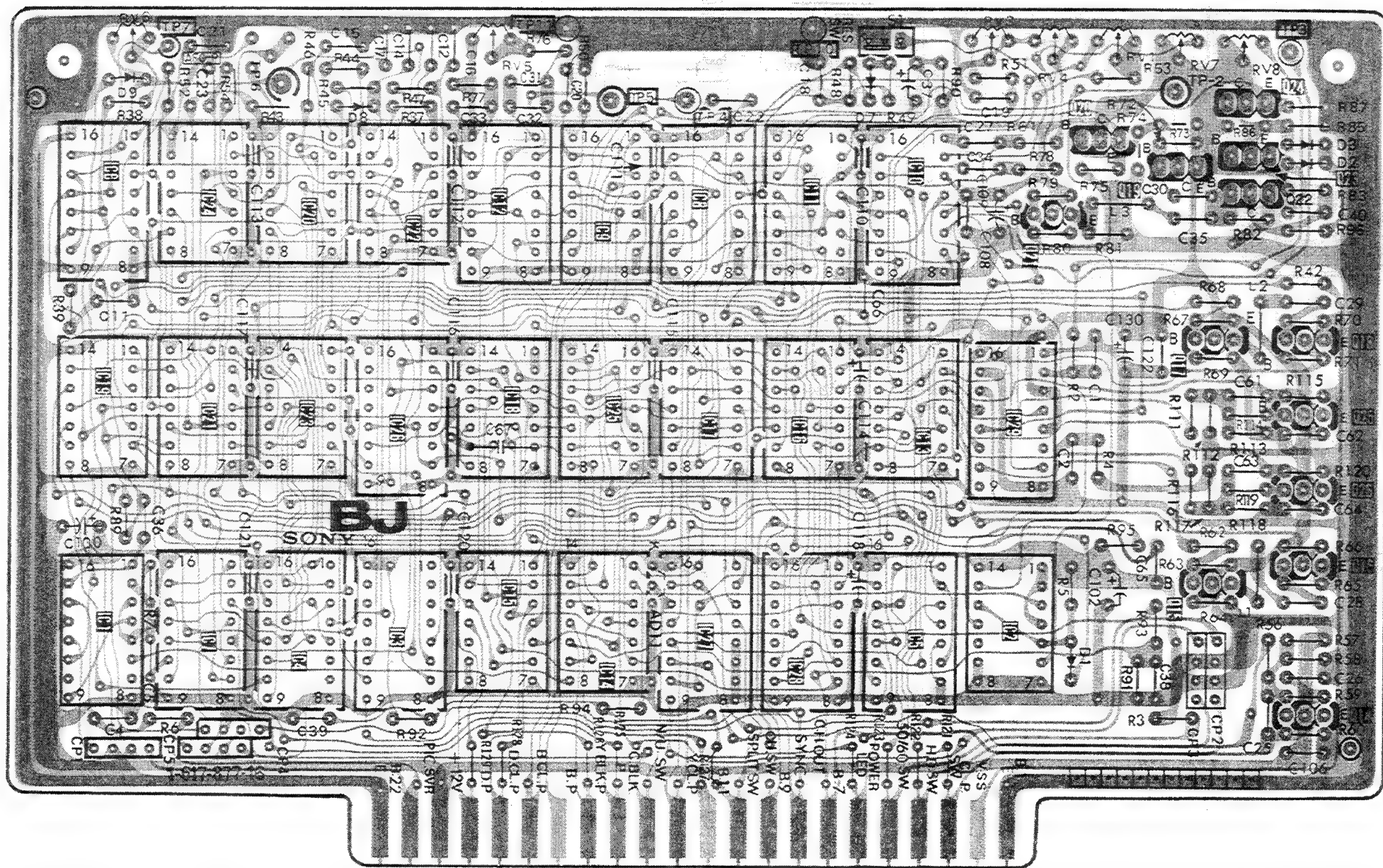
BJ BJ


BJ board (SYNC PROCESSING & PULSE GEN)



BJ board (SYNC PROCESSING & PULSE GEN)

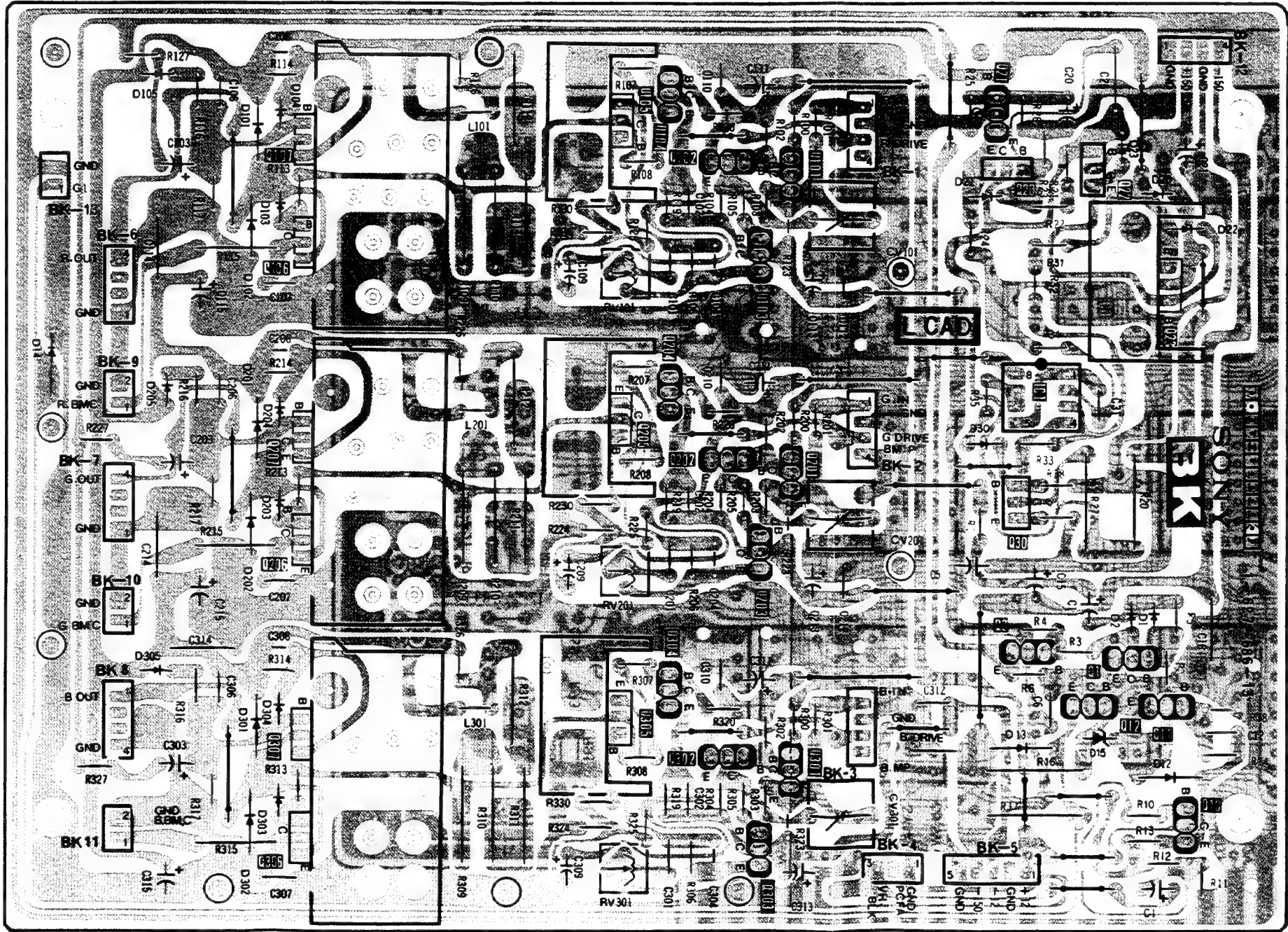
IC	6 19 1	24 21 7	20 23 4	22 26 3	12 18 15	9 25 14	8 17 27	11 16 28	10 13 5	29 2						
Q											21	20	19	17	24 23 22	18 25 26 16 14
D	9	8			7					3 2						
TP ADJ	RV6 TP7		TP6		RV5	TP11	TP5	TP4	TP10	RV3	RV4	RV1	RV7 TP2	RV8	TP3	



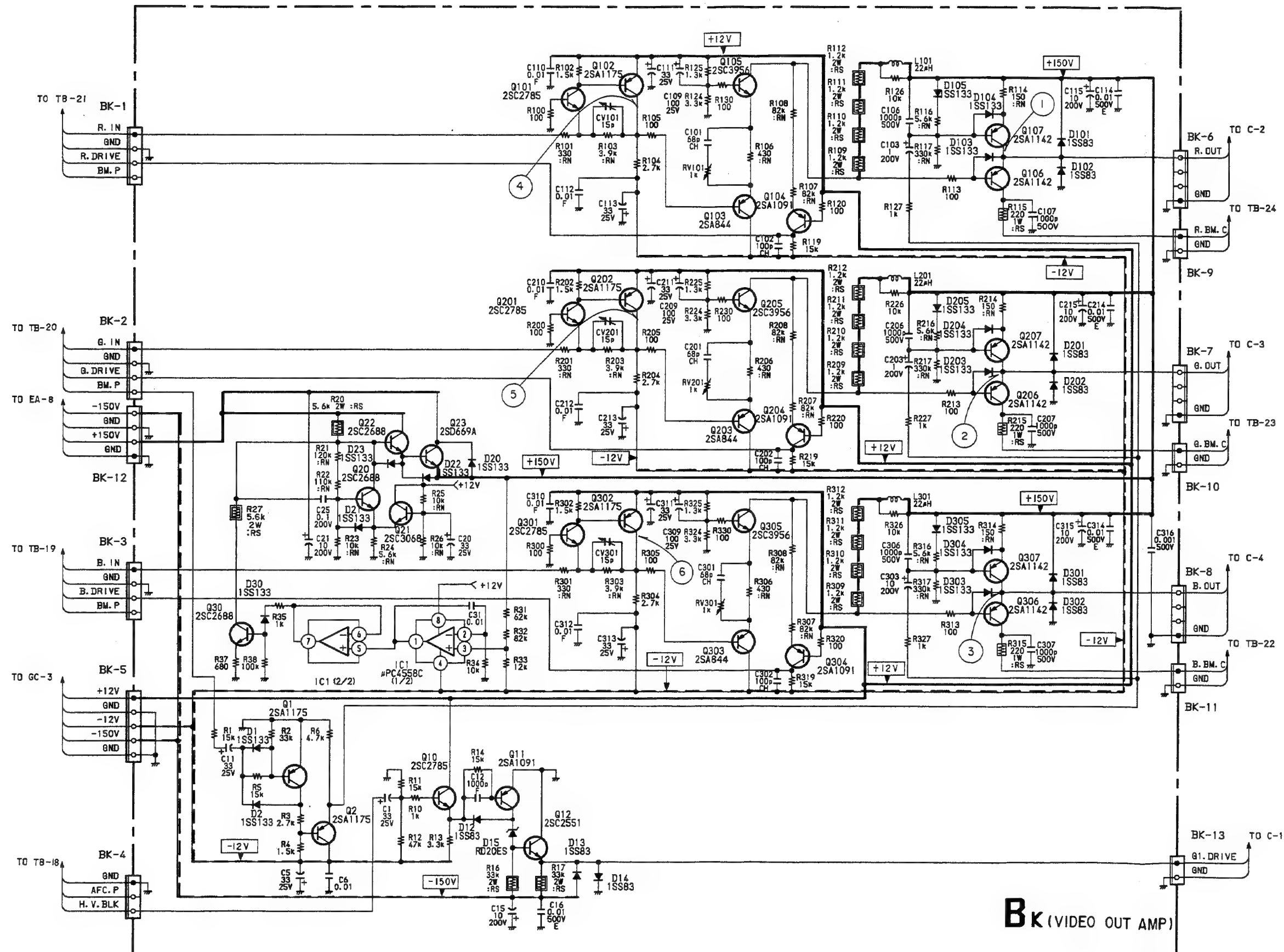
- : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

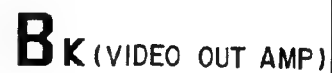
BK board (VIDEO OUT AMP)

IC										
Q			107			105	104			21
			106				102	103	101	20
			207			205	204			30
			206				202	203	201	2
			307			305	304			
		306				302	303	301		
D	14	105	101	104						21
			102	103						30
		205	201	204						
			202	203						23
		305	301	304						2
		302	303							13
ADJ										
						RV101	RV201		CV101	CV201
						RV301			CV301	



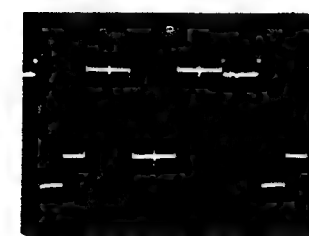
BK board (VIDEO OUT AMP)





IC1	NJM4558D	LIPPLE FILTER
Q1	2SA844	INVERTER
12	2SA1091	LIPPLE FILTER
13	2SA1091	LIPPLE FILTER
101	2SC2668	R-PRE AMP.
102	2SA844	R-PRE AMP.
103	2SC403SP	BUFF.
104	2SC403SP	BUFF.
105	2SA844	BUFF.
106	2SA1406	R-VIDEO OUT
107	2SC3600	R-VIDEO OUT
108	2SC3600	BUFF.
109	2SA1406	BUFF.
110	2SC3600	BUFF.
111	2SA1406	BUFF.
112	2SC2551	R-CLAMP
113	2SC403SP	R-CLAMP
114	2SC403SP	R-CLAMP
115	2SC403SP	BLANK PULSE BUFF.
201	2SC2668	G-PRE AMP.
202	2SA844	G-PRE AMP.
203	2SC403SP	BUFF.
204	2SC403SP	BUFF.
205	2SA844	BUFF.
206	2SA1406	G-VIDEO OUT
207	2SC3600	G-VIDEO OUT
208	2SC3600	BUFF.
209	2SA1406	BUFF.
210	2SC3600	BUFF.
211	2SA1406	BUFF.
212	2SC2551	G-CLAMP
213	2SC403SP	G-CLAMP
214	2SC403SP	G-CLAMP
215	2SC403SP	BLANK PULSE BUFF.
301	2SC2668	B-PRE AMP.
302	2SA844	B-PRE AMP.
303	2SC403SP	BUFF.
304	2SC403SP	BUFF.
305	2SA844	BUFF.
306	2SA1406	B-VIDEO OUT
307	2SC3600	B-VIDEO OUT
308	2SC3600	BUFF.
309	2SA1406	BUFF.
310	2SC3600	BUFF.
311	2SA1406	BUFF.
312	2SC2551	B-CLAMP
313	2SC403SP	B-CLAMP
314	2SC403SP	B-CLAMP
315	2SC403SP	BLANK PULSE BUFF.

D1	1SS148	INVERTER
2	1SS148	INVERTER
101	1SS148	BIAS
102	1SS148	BIAS
103	1SS148	BIAS
104	1SS148	BIAS
105	1SS148	BIAS
106	1SS148	BIAS
107	1SS148	BIAS
108	1SS148	BIAS
109	1SS83	CLAMP
110	RU-1A	PROTECTOR
111	RU-1A	PROTECTOR
112	1SS148	PROTECTOR
113	1SS148	PROTECTOR
114	1SS148	PROTECTOR
115	1SS148	PROTECTOR
116	1SS148	PROTECTOR
201	1SS148	BIAS
202	1SS148	BIAS
203	1SS148	BIAS
204	1SS148	BIAS
205	1SS148	BIAS
206	1SS148	BIAS
207	1SS148	BIAS
208	1SS148	BIAS
209	1SS83	CLAMP
210	RU-1A	PROTECTOR
211	RU-1A	PROTECTOR
212	1SS148	PROTECTOR
213	1SS148	PROTECTOR
214	1SS148	PROTECTOR
215	1SS148	PROTECTOR
216	1SS148	PROTECTOR
301	1SS148	BIAS
302	1SS148	BIAS
303	1SS148	BIAS
304	1SS148	BIAS
305	1SS148	BIAS
306	1SS148	BIAS
307	1SS148	BIAS
308	1SS148	BIAS
309	1SS83	CLAMP
310	RU-1A	PROTECTOR
311	RU-1A	PROTECTOR
312	1SS148	PROTECTOR
313	1SS148	PROTECTOR
314	1SS148	PROTECTOR
315	1SS148	PROTECTOR
316	1SS148	PROTECTOR



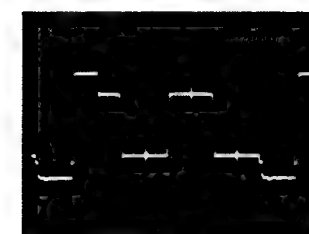
① 3.6V_{p-p} (H)



③ 4.0Vp-p (H)



⑤ $3.0V_{p-p}(H)$



② 60Vp-p (H)

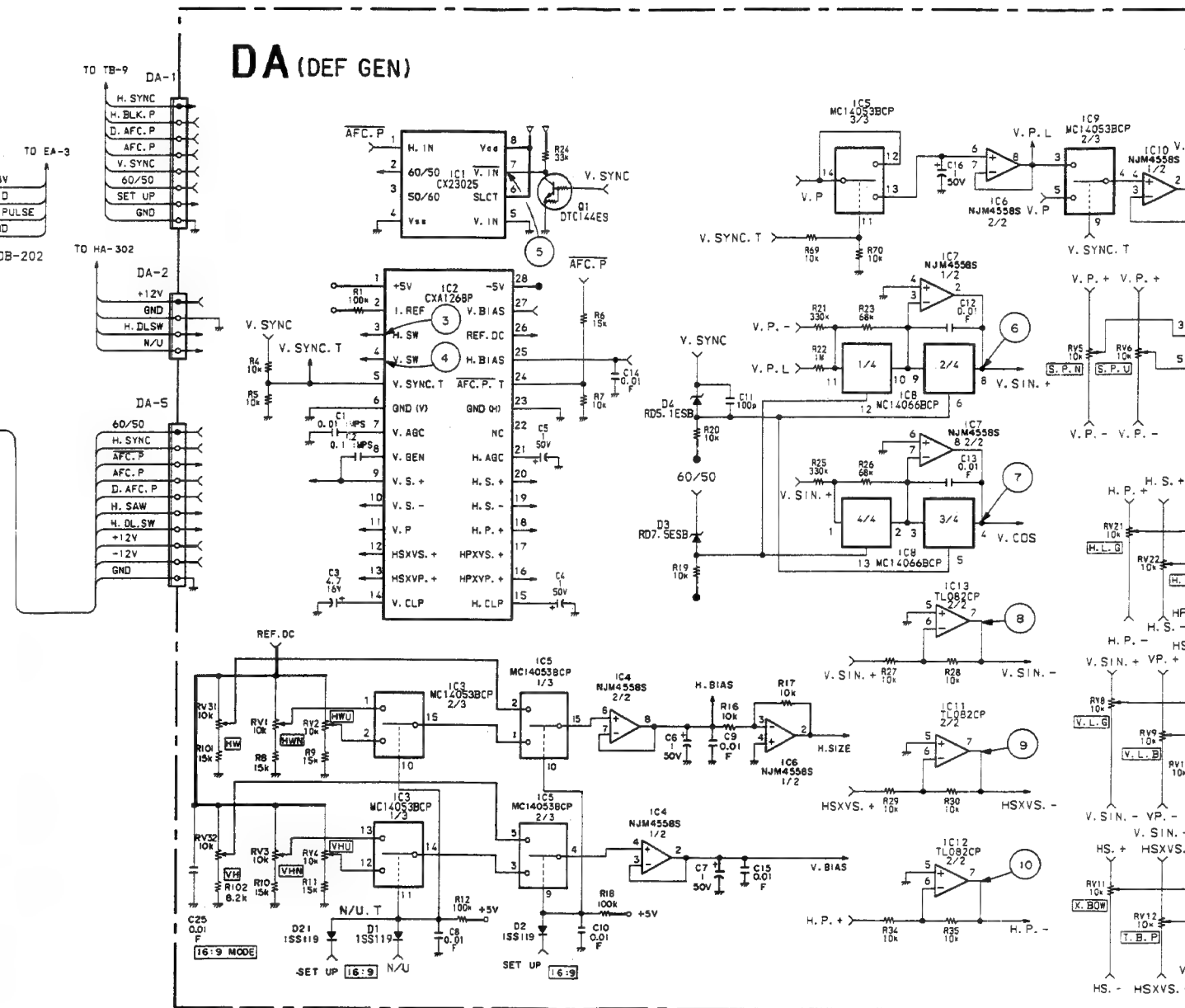
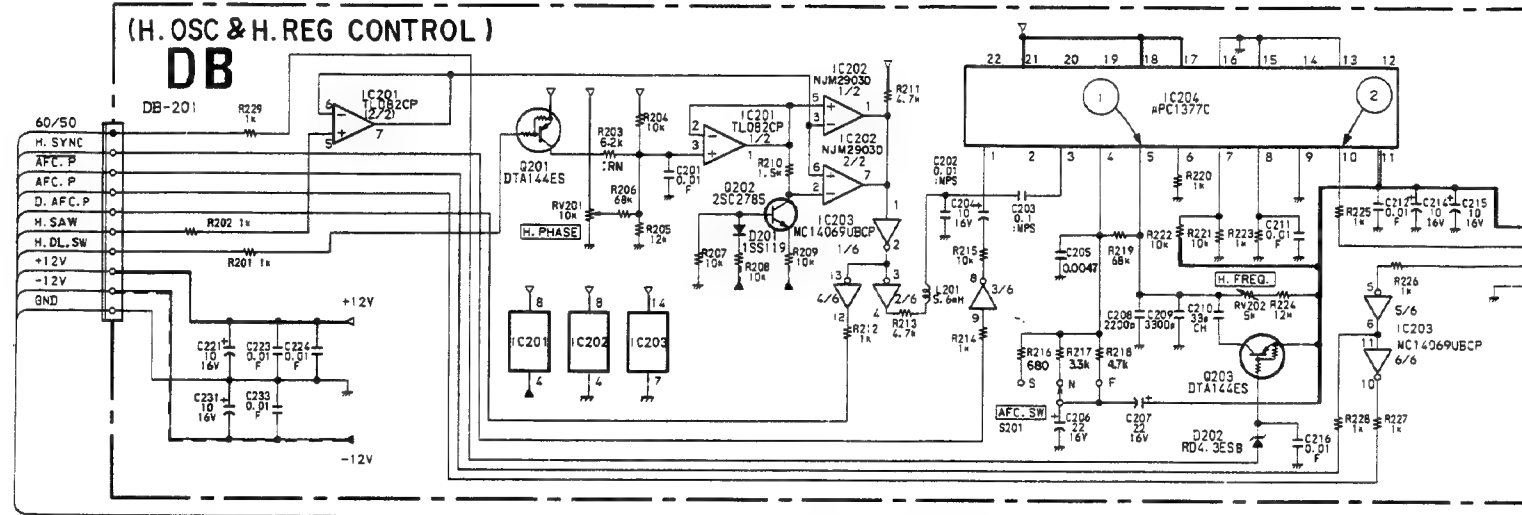


④ 66V_{p-p} (H)



⑥ 54V_{p-p} (H)

DA Board (DEF GEN)
DB Board (H.OSC & H.REG CONTROL)



5. DIAGRAMS



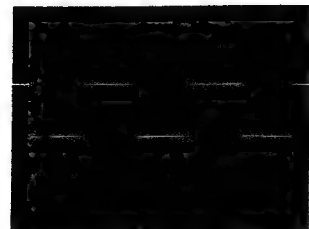
① 4.6Vp-p (H)



② 12Vp-p (H)



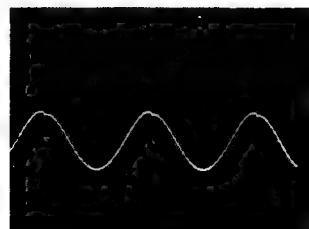
③ 3.3Vp-p (H)



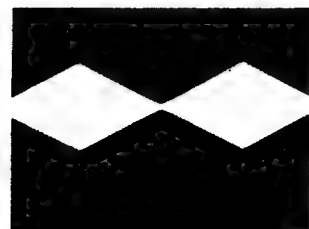
④ 3.3Vp-p (V)



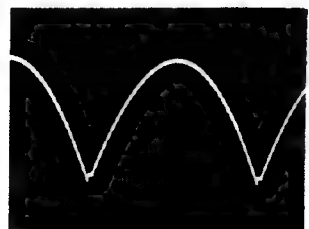
⑤ 12Vp-p (H)



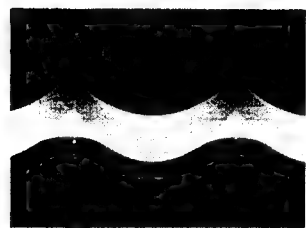
⑥ 8 1Vp-p (V)



⑦ 0.9Vp-p (V)



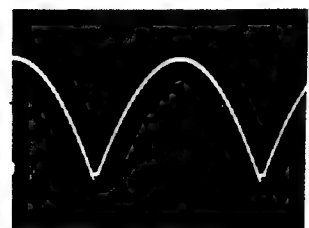
⑧ 2.3Vp-p (H)



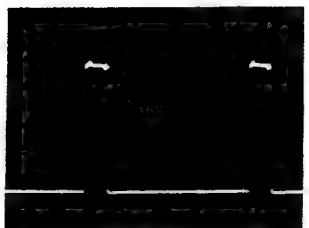
⑨ 9Vp-p (V)



⑩ 3.6Vp-p (V)



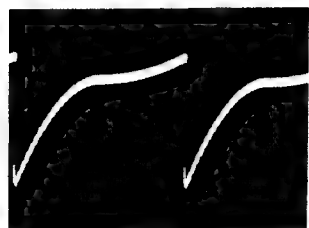
⑪ 0.9Vp-p (V)



⑫ 12Vp-p (H)



⑬ 0.1Vp-p (V)



⑭ 0.6Vp-p (V)

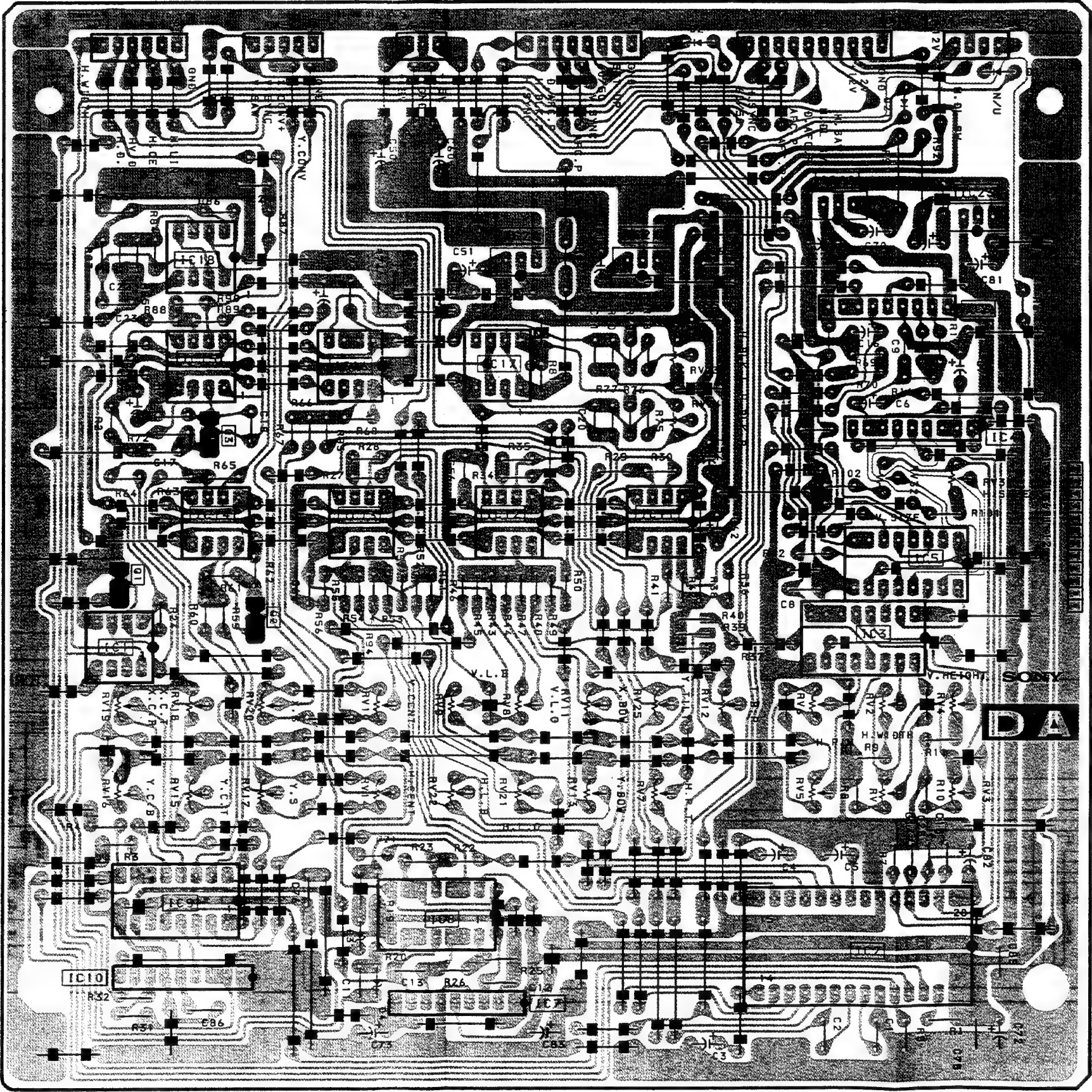


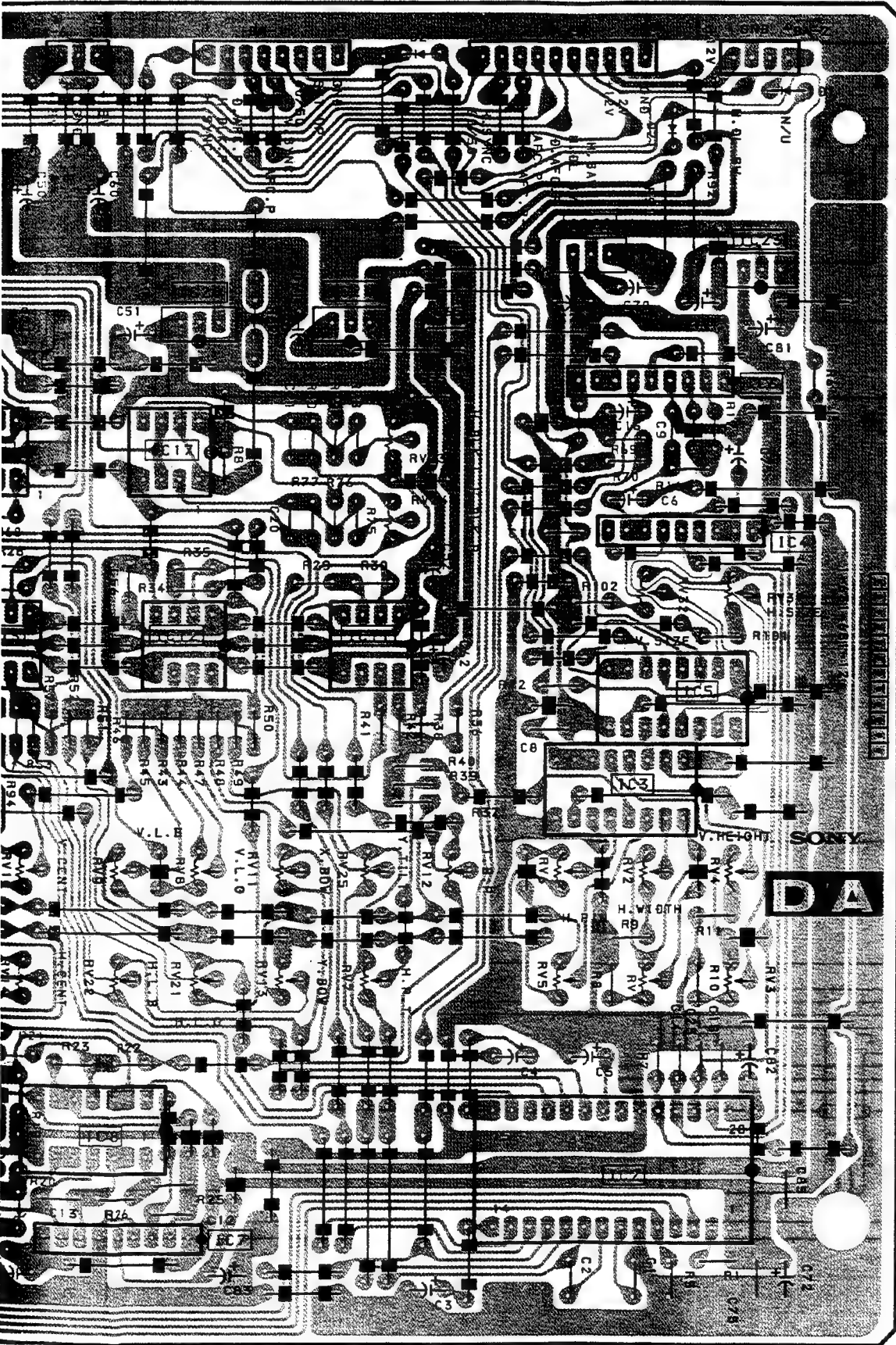
⑮ 3.6Vp-p (V)



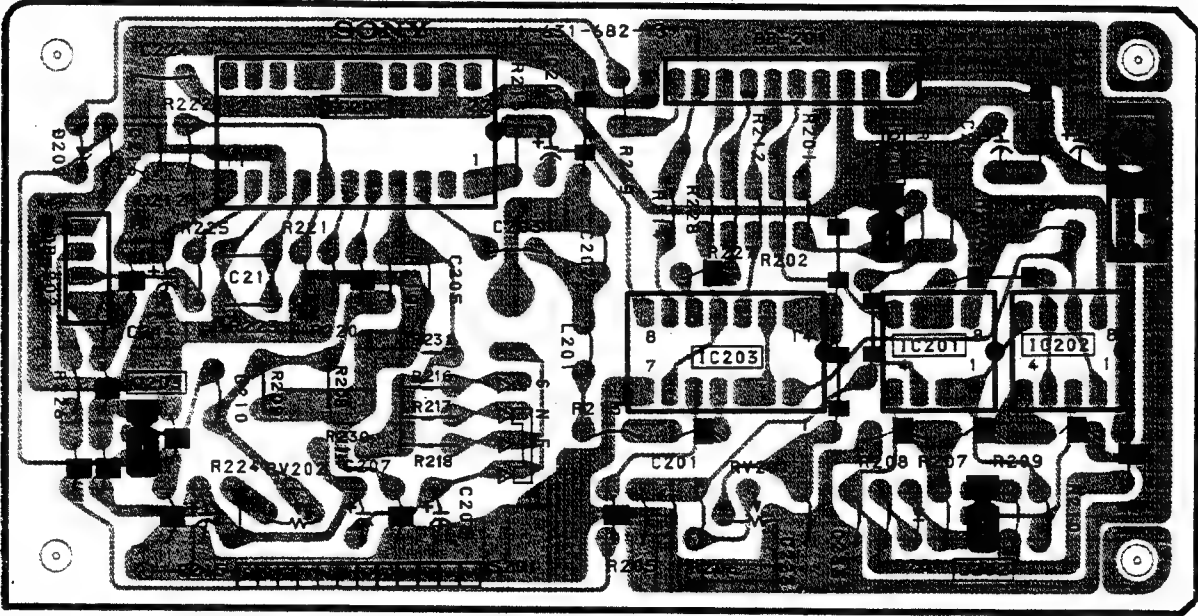
⑯ 7Vp-p (H)

IC	Q	D	RV
		2 1 21	
22 23			
18,20,21			
6			
15,16,17			23
			24
4	3		32,31
14,13,12,11			
5			
	1		
	2		
1	3		19,10,11,6 18,9,25,2 20,8,12,4
			16,14,13,5 15,22,7,1 17,21 3
9,8			
	2	3	
10			
7		4	





DB board (H.OSC & H.REG CONTROL)



DA board

IC	1	CX23025	SYSTEM DETECTOR
	2	CXA1268P	SIGNAL GEN.
	3	MC14053BCP	SCAN SELECT/ADD H.WIDTH
	4	NJM4558S	SCAN SELECT/ADD H.WIDTH
	5	MC14053BCP	SCAN SELECT/ADD H.WIDTH
	6	NJM4558S	SCAN SELECT/ADD H.WIDTH
	7	NJM4558S	SIN GEN./COS GEN.
	8	MC14066BCP	SIN GEN./COS GEN.
	9	MC14053BCP	ADD Y.CONV/ADD X.CONV
	10	NJM4558S	SIGNAL GEN.
	11	TL082CP	SIGNAL GEN./ADD H.WIDTH
	12	TL082CP	SIGNAL GEN./ADD V.SAW
	13	TL082CP	SIGNAL GEN./ADD H.LIN.
	14	NJM4558D	ADD Y CONV/ADD X.CONV
	15	TL082CP	H.SAW.GEN.
	16	NJM4558D	ADD H.CENT
	17	NJM2903D	H. BLK GEN.
	18	NJM2903D	H.V DRIVE PULSE GEN.
	20	NJM78M12FA	+ 12V REG
	21	NJM79M12FA	- 12V REG
	22	NJM78M05FA	+ 5V REG
	23	NJM79M05FA	- 5V REG
Q	1	DTC144ES	SYSTEM DETECTOR
	2	2SC2551	ADD Y CONV
	3	2SC2785	H.SAW.GEN.
D	1	1SS119	SCAN SELECT
	2	1SS119	SCAN SELECT
	3	RD7.5ES-B	LIMITER
	4	RD5.1ES-B	LIMITER
	21	1SS119	SCAN SELECT

DB board

IC	201	TL082CP	H DELAY/H PHASE
	202	NJM2903D	H DELAY/H PHASE
	203	MC14069UBCP	H DELAY/H PHASE
	204	UPC1377C	H OSC/H AFC
Q	201	DTA144ES	H.PHASE
	202	2SC2785	H.PHASE
	203	DTA144ES	SYSTEM DETECTOR/AFC
D	201	1SS119	H. PHASE
	202	RD4.3ES-B1	SYSTEM DETECTOR/AFC

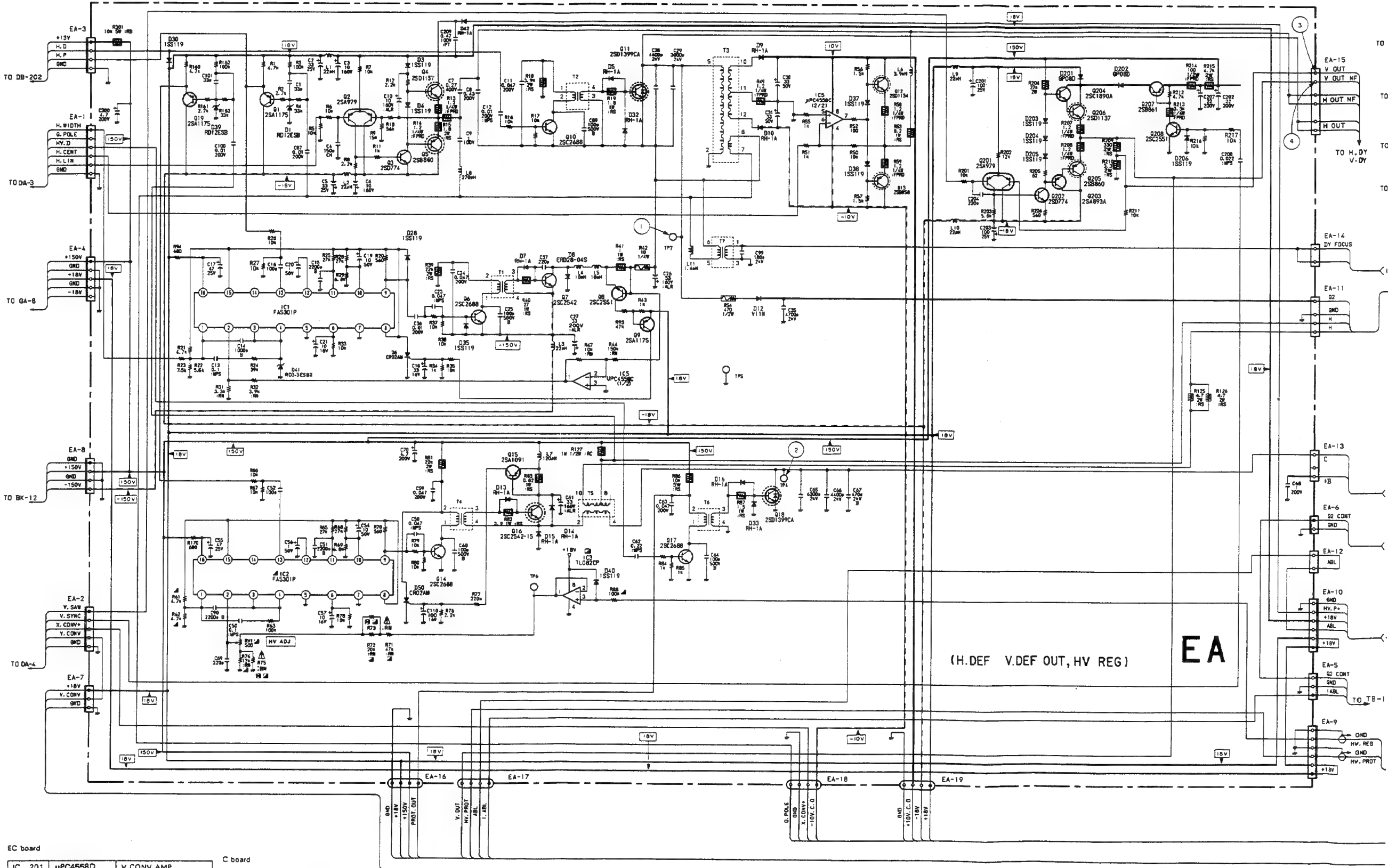
EA board

IC	1	FA5301P	P.W.M CONTROL
	2	FA5301P	P.W.M CONTROL
	3	TL082CP	BUFF/COMPARATOR
	5	UPC4558D	H. CENT
Q	1	2SA1175	AFC PULSE
	2	2SA979	H.LIN AMP
	3	2SD774	H.LIN AMP
	4	2SD1137	H.LIN AMP
	5	2SB860	H.LIN AMP
	6	2SC2688	P.W.M DRIVE
	7	2SC2542	P.W.M OUT
	8	2SC2551	O.C.P
	9	2SA1175	O.C.P
	10	2SC2688	H.DRIVE
	11	2SD1399	H.OUT
	12	2SD1134	H.CENT AMP
	13	2SB858	H.CENT AMP
	14	2SC2688	P.W.M
	15	2SA1091	O.C.P
	16	2SC2542	DC-DC CONVERTER
	17	2SC2688	HV DRIVE
	18	2SD1399	HV CONVERTER
	19	2SA1175	AFC.PULSE
	201	2SA979	V.OUT AMP
	202	2SD774	V.OUT AMP
	203	2SA893A	V.OUT AMP
	204	2SC1890A	V.OUT AMP
	205	2SB860	V.OUT AMP
	206	2SD1137	V.OUT AMP
	207	2SB861	RETRACE BOOST AMP
	208	2SC2551	RETRACE BOOST AMP
D	1	RD12ES-B	BIAS
	3	1SS119	BIAS
	4	1SS119	BIAS
	5	RH-1A	H.DRIVE
	6	CR02AM-4	PROTECTOR
	7	RH-1A	DC-DC CONV
	8	ERD28-04S	DC-DC CONV
	9	RH-1A	H.P. RECT
	10	RH-1A	H.P. RECT
	12	V11N	RECT
	13	RH-1A	HV CONV
	14	RH-1A	DC-DC CONV
	15	RH-1A	DC-DC CONV
	16	RH-1A	HV CONV
	28	1SS119	PROTECTOR
	30	1SS119	PROTECTOR
	32	RH-1A	PROTECTOR
	33	RH-1A	PROTECTOR
	35	1SS119	PROTECTOR
	37	1SS119	BIAS
	38	1SS119	BIAS
	39	RD12ES-B	BIAS
	40	1SS119	PROTECTOR
	41	RD3.3ES-B2	PROTECTOR
	42	RH-1A	RECT
	50	CR02AM-4	PROTECTOR
	201	GP080	RETRACE BOOST SW
	202	GP080	RETRACE BOOST SW
	203	1SS119	BIAS
	204	1SS119	BIAS
	205	1SS119	BIAS
	206	1SS119	PROTECTOR

EB board

IC	4	NJM2903D	HV PROT/BEAM CURRENT PROT1
	6	NJM2903D	CRT PROT/BEAM CURRENT PROT2
Q	20	2SC2785	CYR PROT
D	19	1SS119	PROTECTOR
	20	1SS119	MIXER
	24	UPC574J	32V REG
	25	1SS119	MIXER
	26	1SS119	MIXER
	27	CR02AM-4	PROTECTOR
	29	UPC574J	32V REG
	36	1SS119	PROTECTOR
	51	CR02AM-4	PROTECTOR

EA board (H.DEF & V.DEF OUT, HV REG)
EB board (H.V , BEAM CURRENT & CRT PROTECTOR)
EC board (V CONVERGENCE OUT)
C board (CRT SOCKET)
P board (FBT)



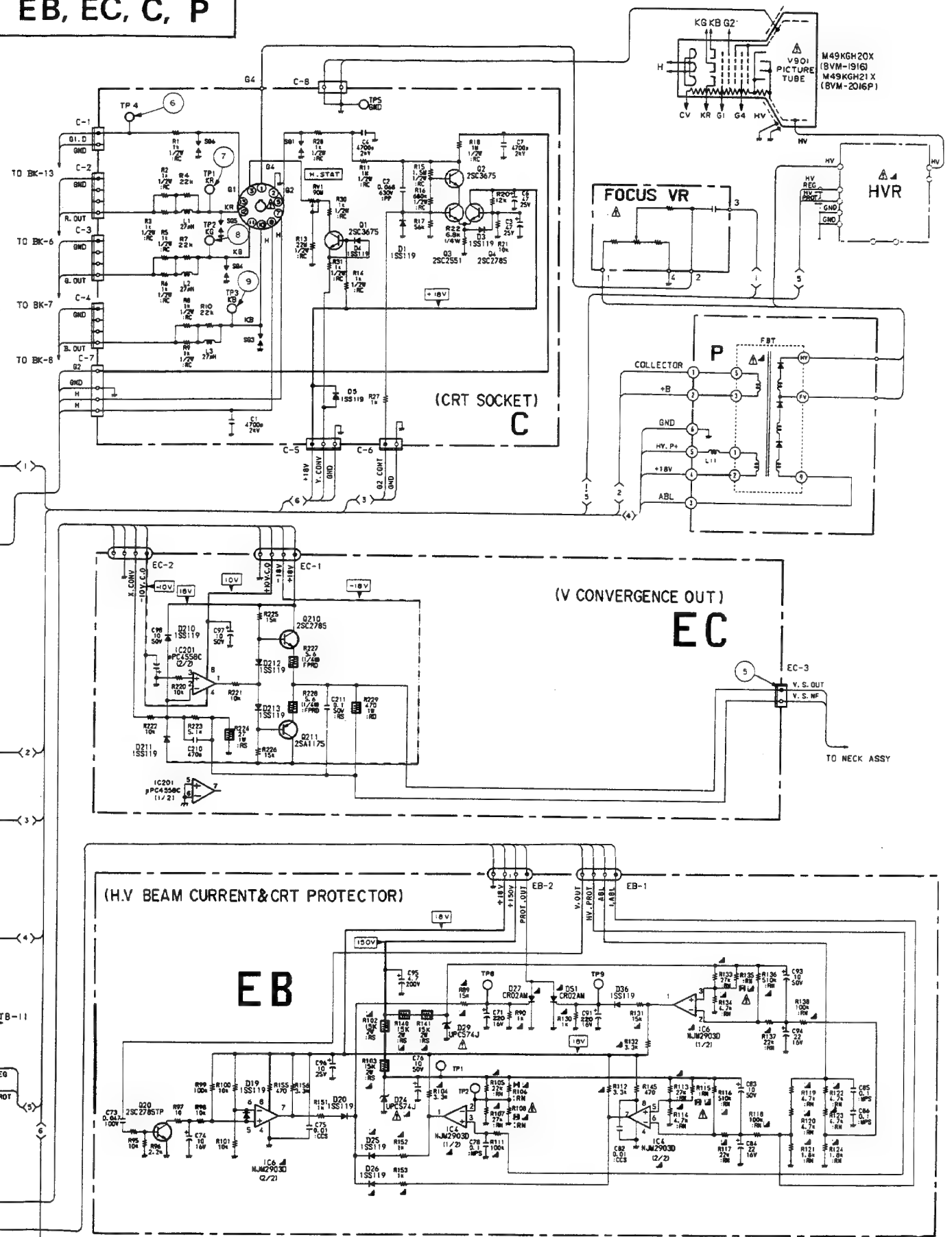
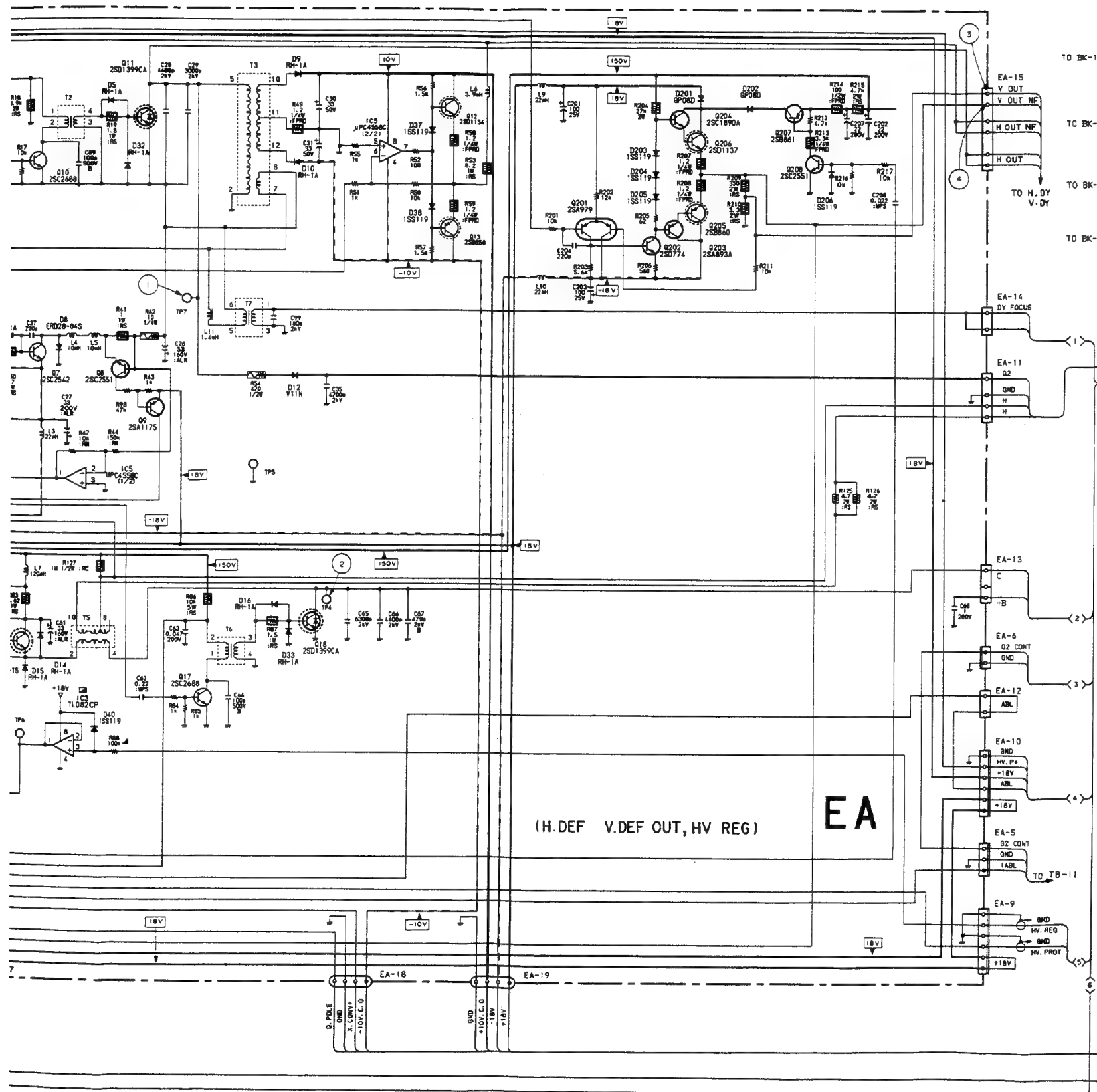
EC board

IC	201	uPC4558D	V CONV AMP
Q	210	2SC2785	V CONV AMP
	211	2SA1175	V CONV AMP
D	210	1SS119	PROTECTOR
	211	1SS119	PROTECTOR
	212	1SS119	BIAS
	213	1SS119	BIAS

C board

Q	1	2SC3675	V.CON DRIVE
	2	2SC3675	G2 CONT
	3	2SC2551	G2 CONT
	4	2SC2785	G2 CONT
D	1	1SS119	PROTECTOR
	3	1SS119	PROTECTOR
	4	1SS119	PROTECTOR
	5	1SS119	PROTECTOR

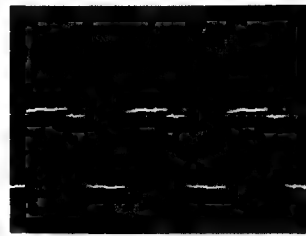
EA, EB, EC, C, P EA, EB, EC, C, P



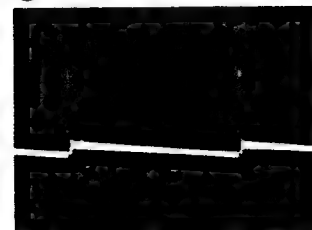
EA board (H.DEF & V DEF OUT, HV.REG)



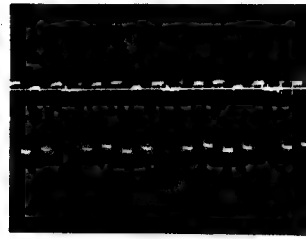
① 760Vp-p (H)
② 840Vp-p (H)



③ 76Vp-p (H)



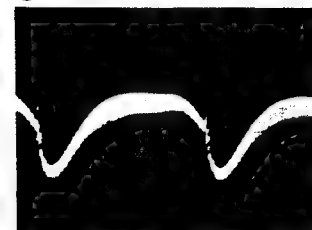
④ 110 Vp-p (V)



⑤ 54Vp-p (H)



⑥ 3.6Vp-p (V)



⑦ 0.5Vp-p (V)

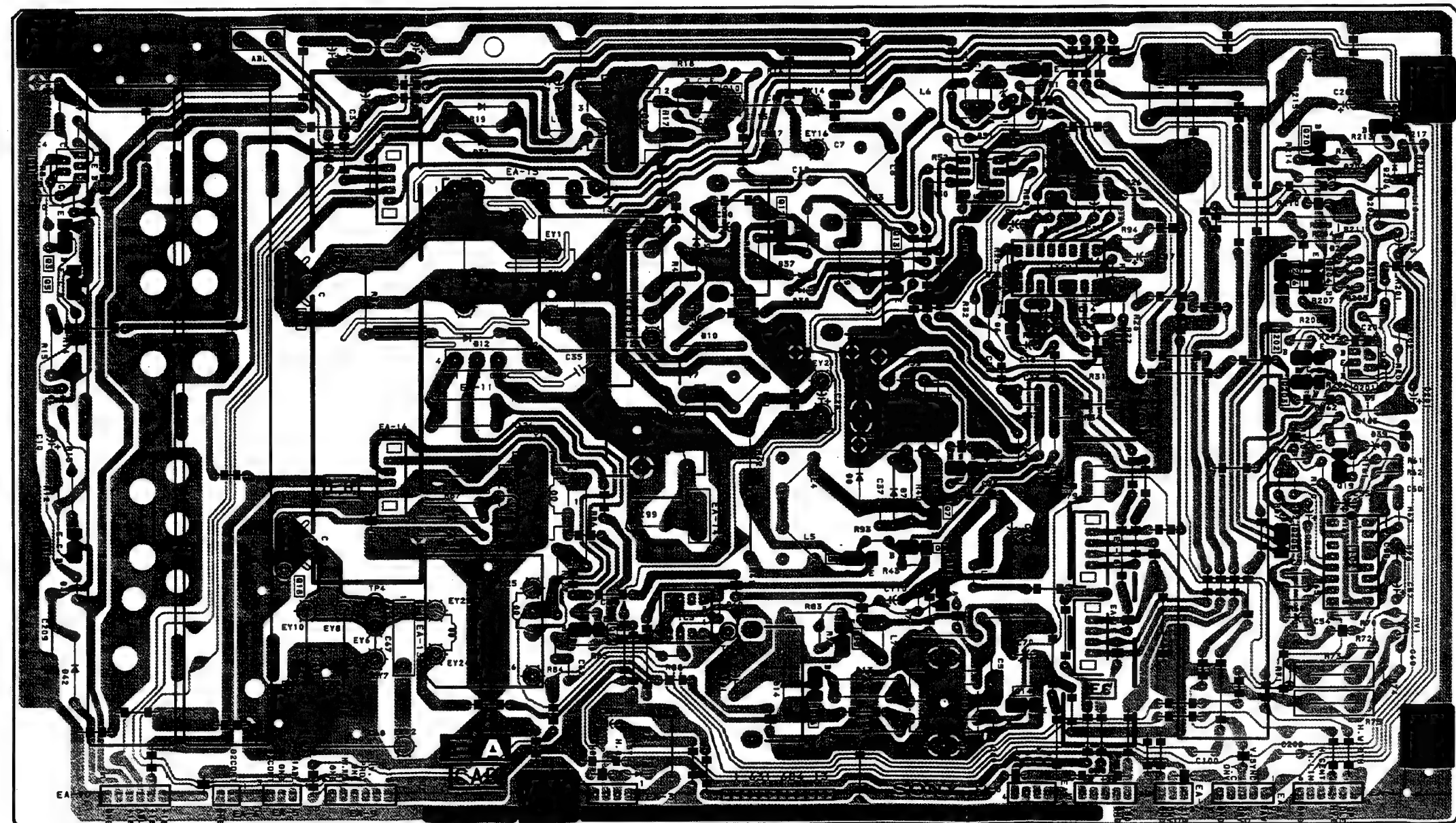


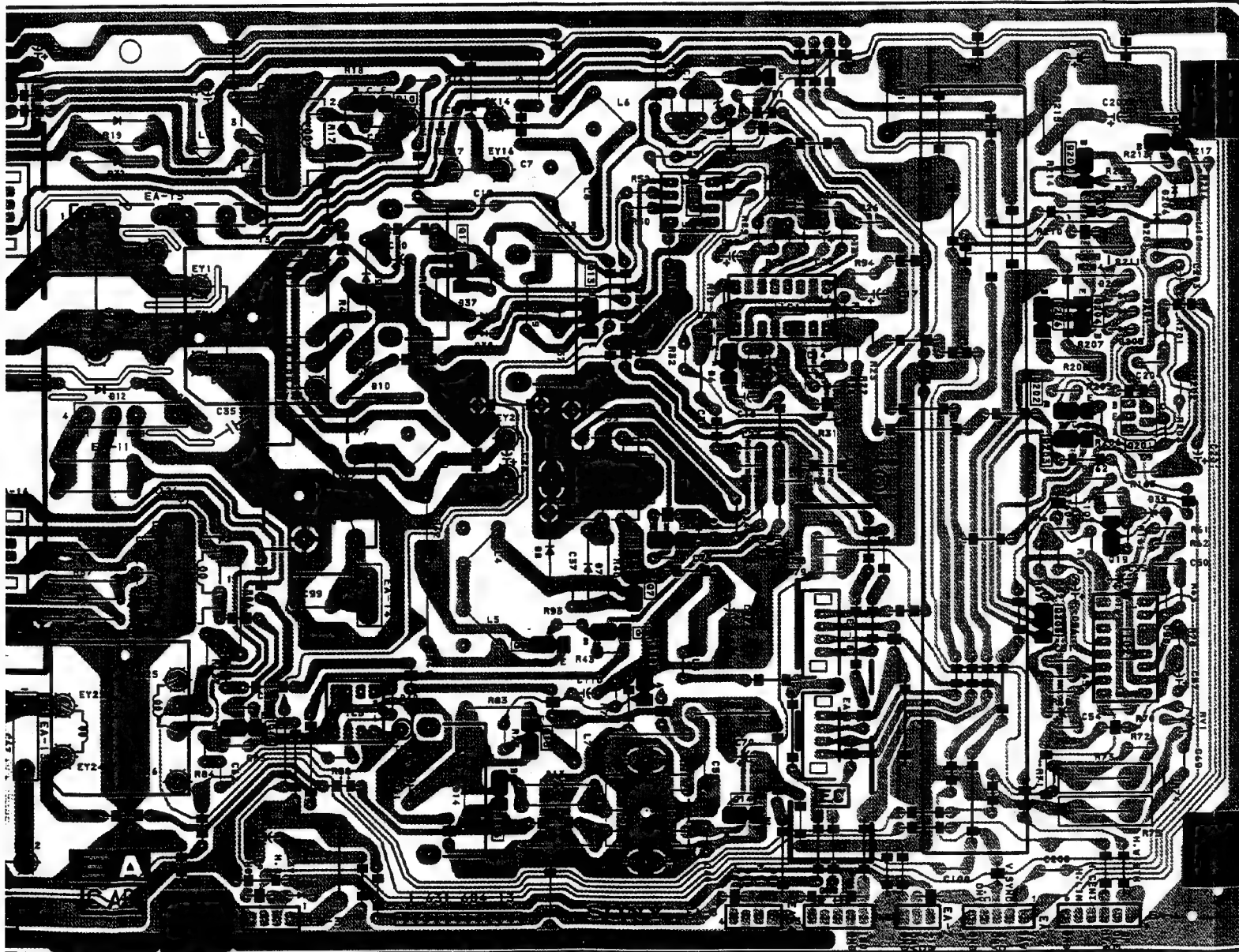
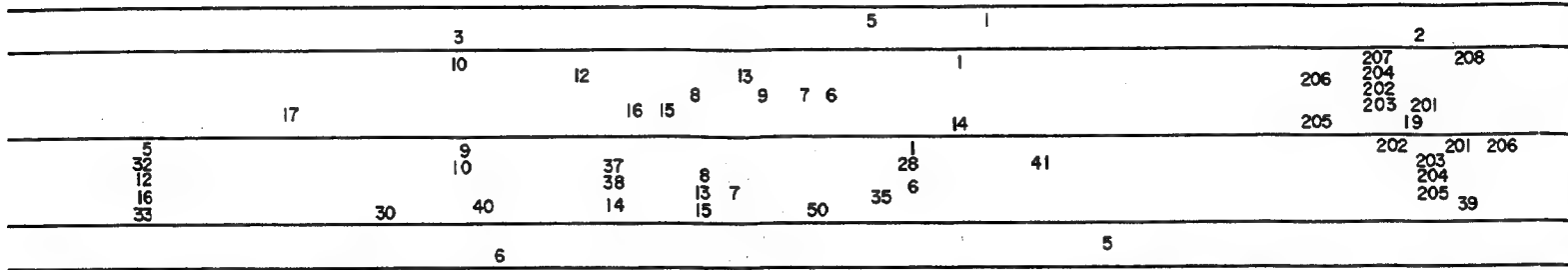
⑧ 124Vp-p (H)



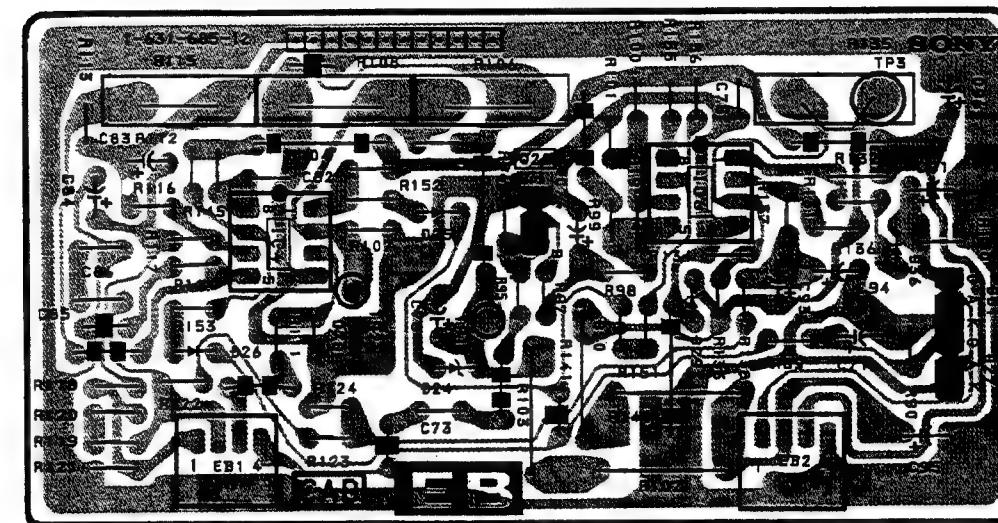
⑨ 60Vp-p (H)

IC																								
Q	4.500N	11	18	17	10	12	16	15	8	13	9	7	6	1	14	206	207	204	202	203	201	208		
D	4.000A	35	12	16	33	30	40	37	38	14	8	13	7	50	35	6	28	41	202	203	204	205	201	206
TP	7	4			6														5					

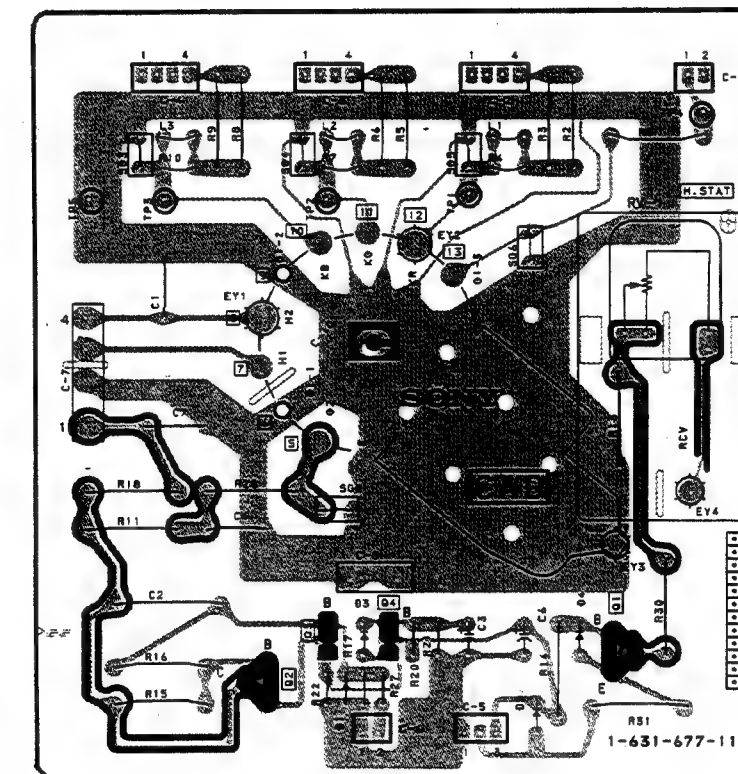




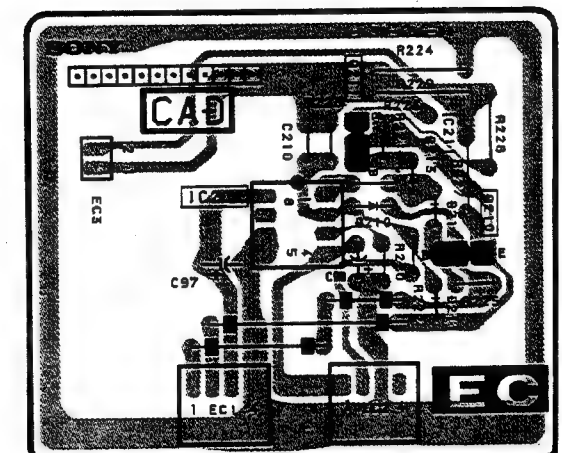
EB board (H.V, BEAM CURRENT & CRT PROTECTOR)



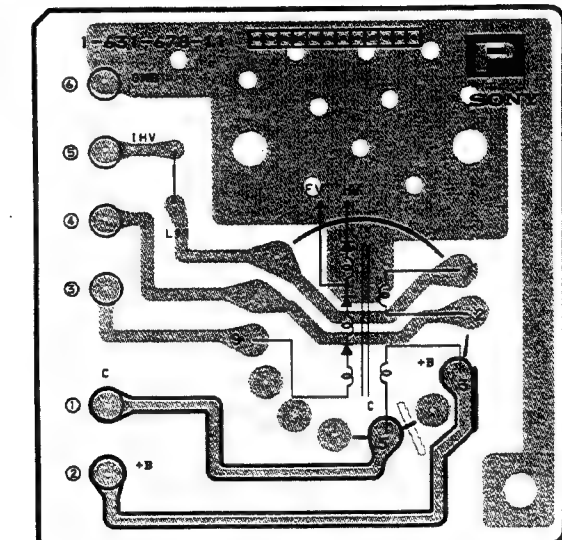
C board (CRT SOCKET)



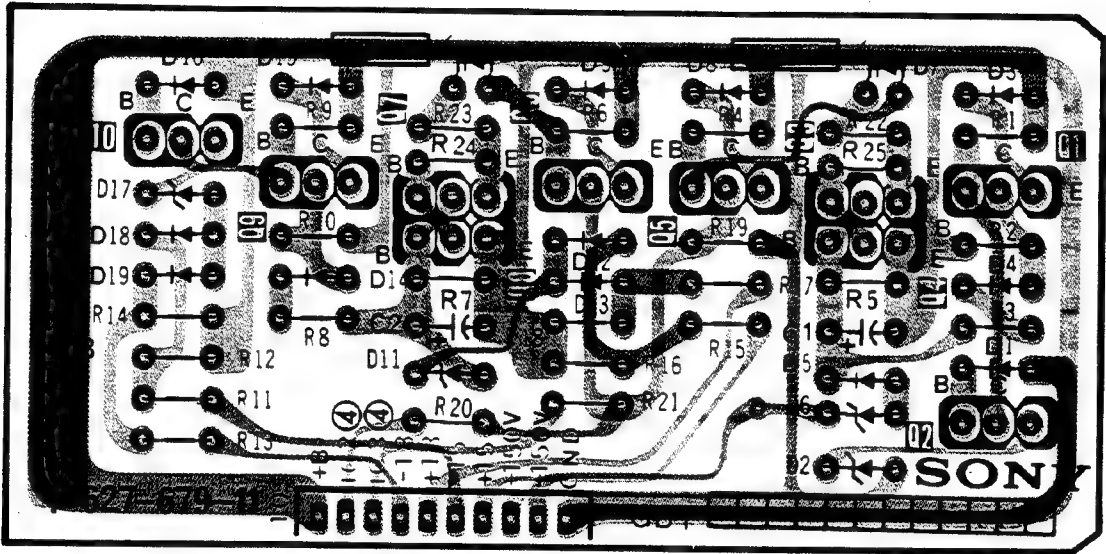
EC board (V CONVERGENCE OUT)



P board (FBT)

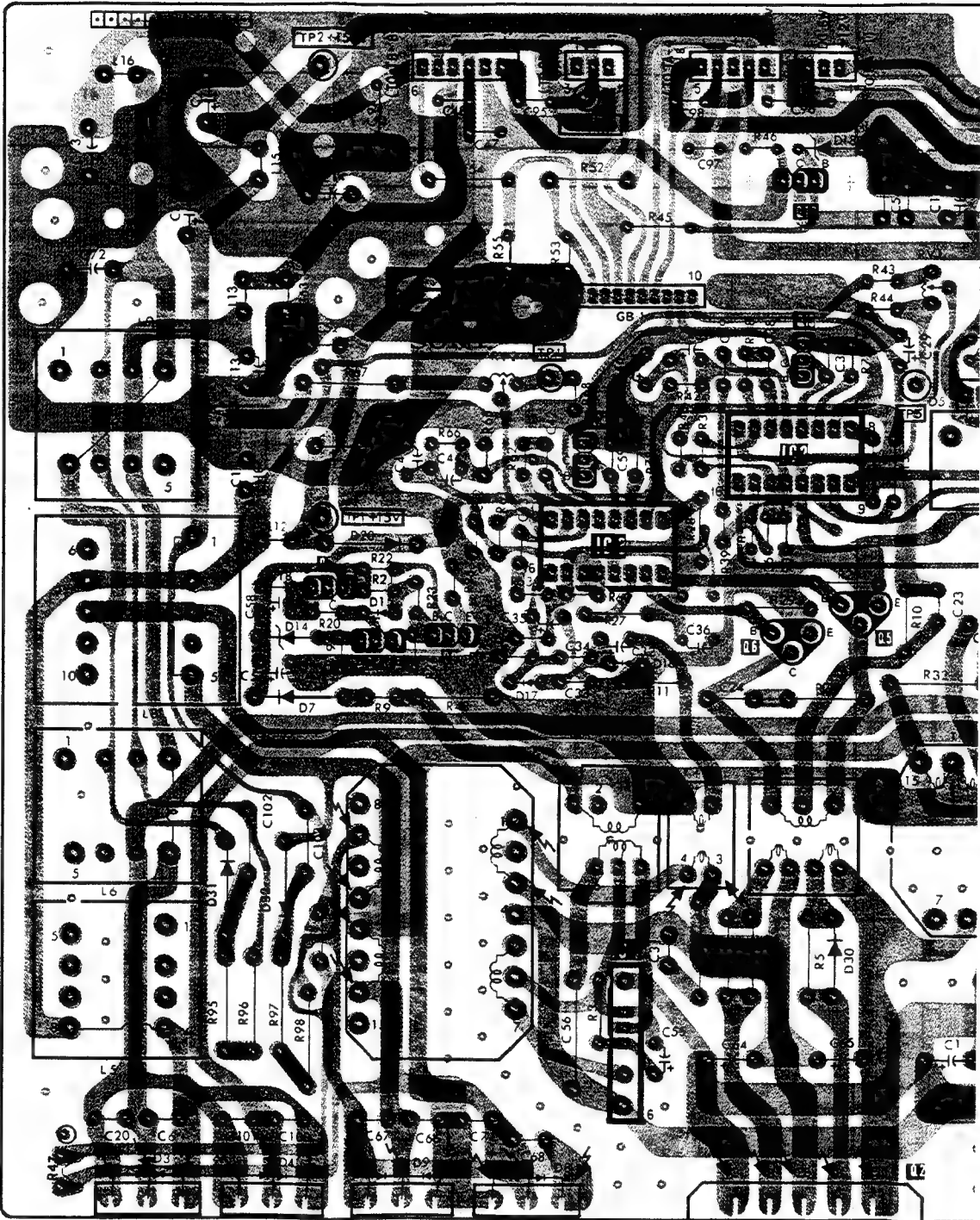


GB board (OVER VOLTAGE PROTECTOR)



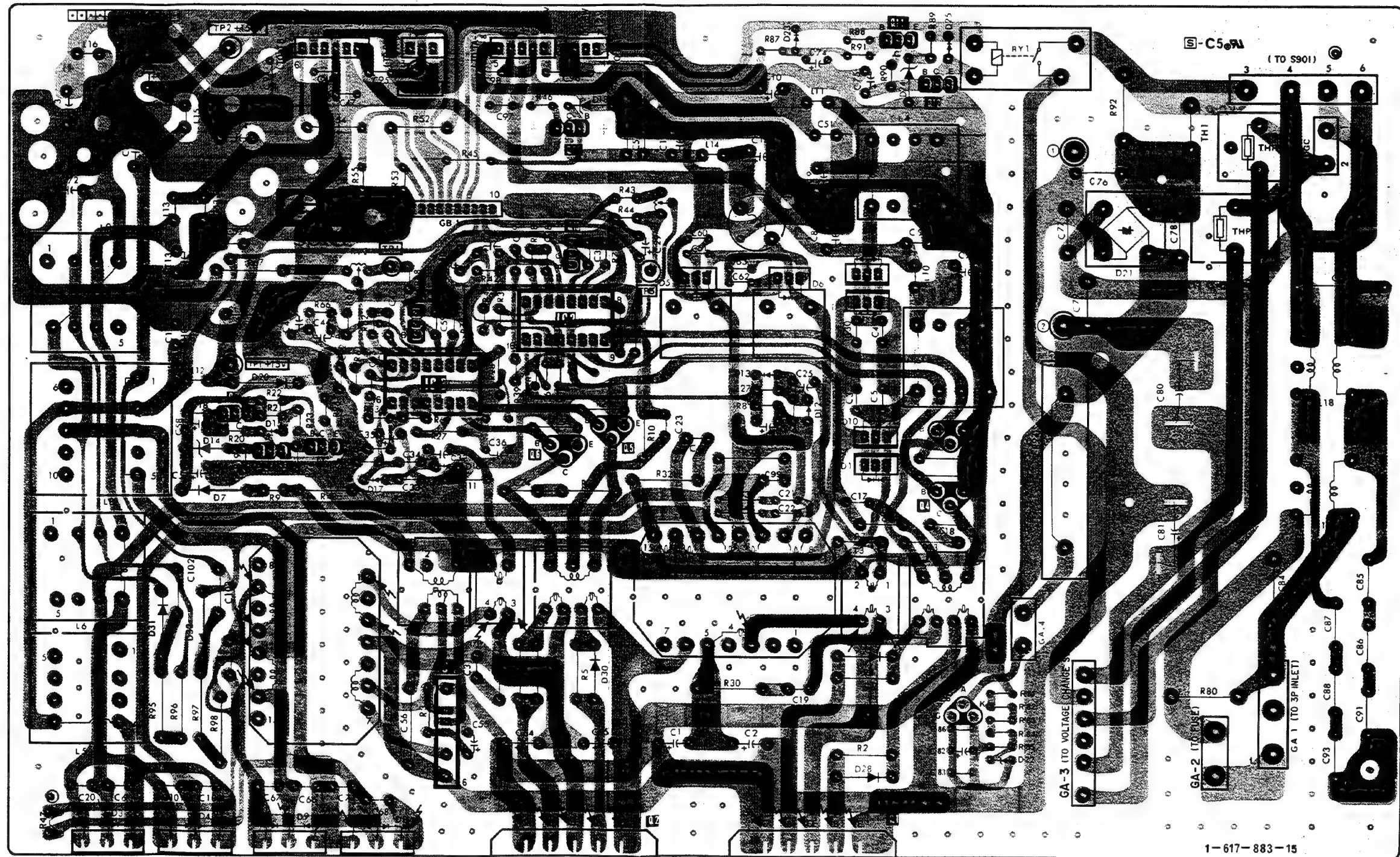
GA board (AC RECT, DC REG)

IC	Q	D	ADJ. TP
		23 25	
	11		TP2
	12	24	TP3
		18	
	10		
			RV1
		21	
	13	11	RV2 TP4
		5 6	TP5
2	14	2	
3			TP1
		20 13	
	7	12	
	5	15	
	6	10	
	3	14	
		16	
		17	
		7	
		31,32	
		29 27	
		30	
		26	
1			
		22	
		28	
		3	
		4	
	2	9	
	1	8	



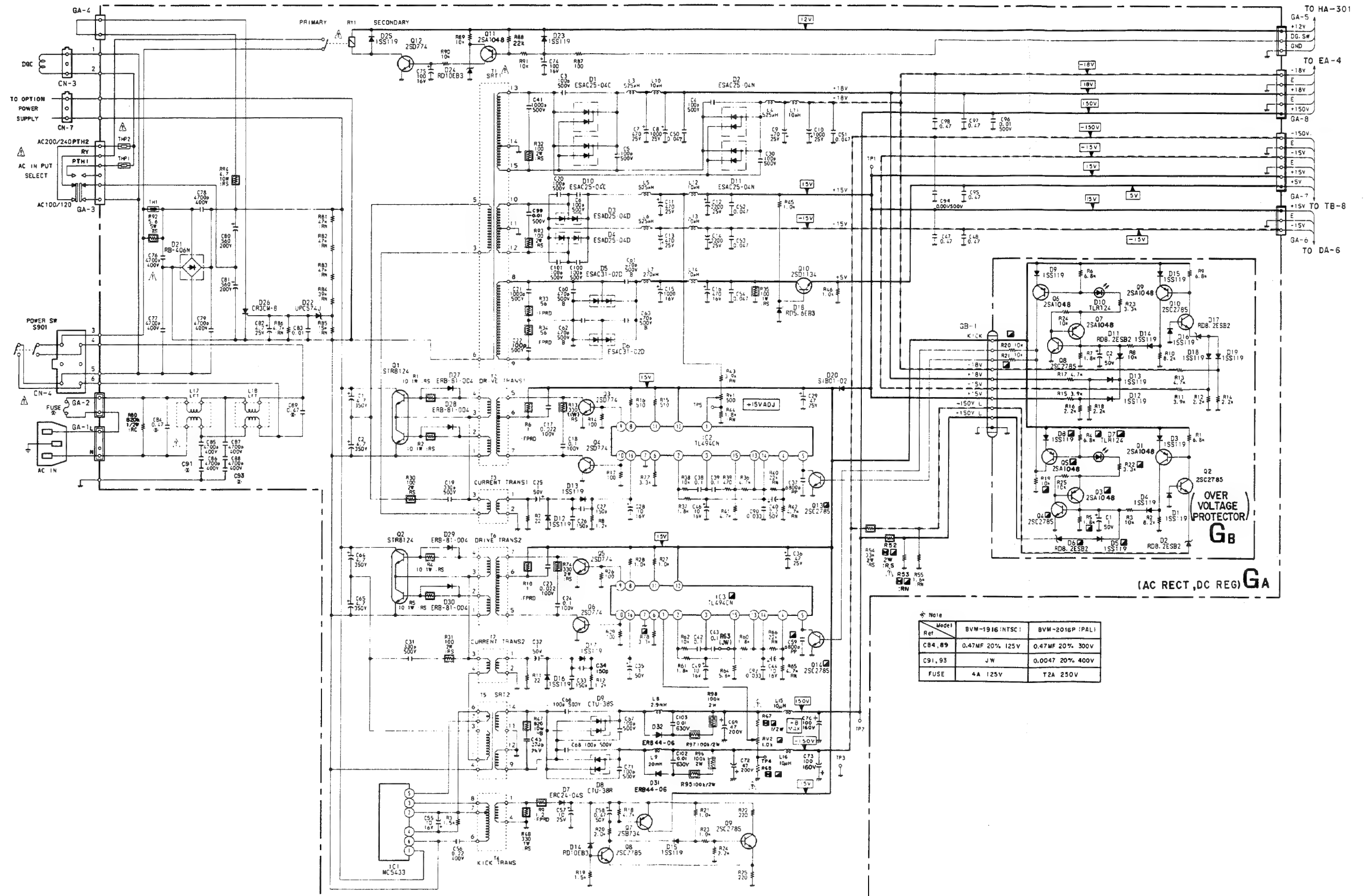
A board (AC RECT, DC REG)

IC	Q	D	ADJ. TP
		23 25	TP2
	11	24	TP3
	12	18	
	10		
		21	RV1
	13	11	RV2 TP4
		5 6	TP5
2	14	2	
3			TP1
		20 13	
	7	12	
	5	15	
9	6	10	
8		14	
		16	
		17	
		7	
		31,32	
		29 27	
		30	
		26	
		22	
		28	
		3	
		4	
		9	
		8	
	2	1	



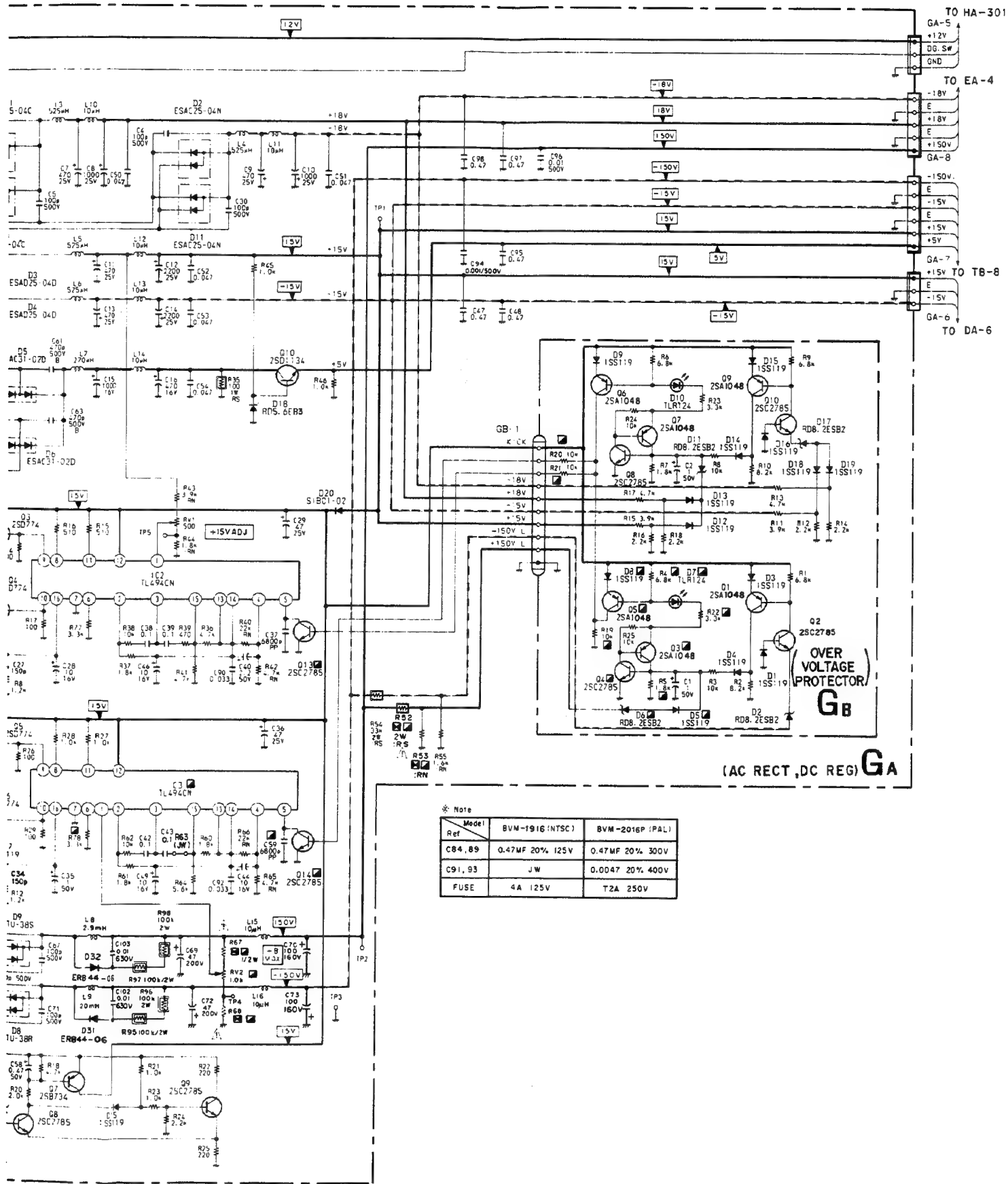
• : Pattern from the side which enables seeing.
• : Pattern of the rear side.

GA board (AC RECT, DC REG)
GB board (OVER VOLTAGE PROTECTOR)



* Note

Ref	Model	BVM-1916 (INTSC)	BVM-2016P (PAL)
C84, 89		0.47MF 20% 125V	0.47MF 20% 300V
C91, 93		4W	0.0047 20% 400V
FUSE		4A 125V	T2A 250V



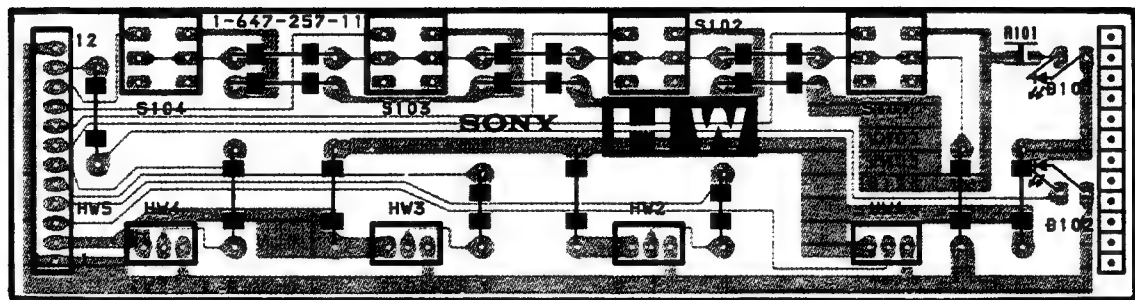
GA BOARD

IC1	MC5433	STARTER
2	TL494CN	DC REG
3	TL494CN	DC REG
Q1	STR8124	DC-DC CONV.
2	STR8124	DC-DC CONV.
3	2SD774	CONV. DRIVE
4	2SD774	CONV. DRIVE
5	2SD774	CONV. DRIVE
6	2SD774	CONV. DRIVE
7	2SB734	SOFT. START
8	2SC2785	SOFT. START
9	2SC2785	SOFT. START
10	2SD1134	+5V REG.
11	2SA1048	D.G. CONTROL
12	2SD774	D.G. CONTROL
13	2SC2785	O.V.P SW
14	2SC2785	O.V.P SW
D1	ESAC25-04C	+18V RECT
2	ESAC25-04N	-18V RECT
3	ESAD25-04D	+15V RECT
4	ESAD25-04D	-15V RECT
5	ESAC31-02D	+5V RECT
6	ESAC31-02D	-5V RECT
7	ERC24-045	START. RECT
8	CTU-38R	-150V RECT
9	CTU-38S	+150V RECT
10	ESAC25-04C	+18V RECT
11	ESAC25-04N	-18V RECT
12	1SS119	O.C.P RECT
13	1SS119	O.C.P RECT
14	RD10EB3T	STARTER
15	1SS119	STARTER
16	1SS119	O.C.P RECT
17	1SS119	O.C.P RECT
18	RD5.6E-B3TN	+5V REG
19	1SS119	
20	SI801-02	DC. STOPPER
21	RB406N	AC RECT
22	UPC574J	O.V.P
23	1SS119	DISCHARGE
24	RD10EB3T	+10V REG
25	1SS119	SW PROTECT
26	CR3CM-8	O.V.P
27	ERB81-004	CONV. DRIVE
28	ERB81-004	CONV. DRIVE
29	ERB81-004	CONV. DRIVE
30	ERB81-004	CONV. DRIVE
31	ERB44-06	
32	ERB44-06	

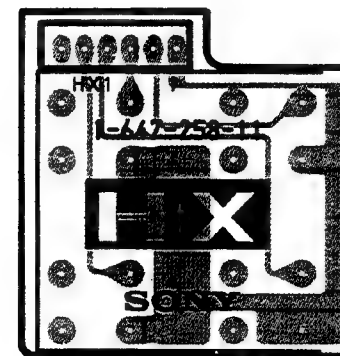
GB BOARD

Q1	2SA1048	O.V.P (-150V)
2	2SC2785	O.V.P (-150V)
3	2SA1048	O.V.P (+150V)
4	2SC2785	O.V.P (+150V)
5	2SA1048	O.V.P (+150V)
6	2SA1048	O.V.P (+15V)
7	2SA1048	O.V.P (+18V)
8	2SC2785	O.V.P (+15V)
9	2SA1048	O.V.P (-15V)
10	2SC2785	O.V.P (-18V)
D1	1SS119	PROTECTOR
2	RD8.2ES-T1B2	REFERENCE
3	1SS119	PROTECTOR
4	1SS119	MIX.
5	1SS119	MIX.
6	RD8.2ES-T1B2	REFERENCE
7	TLR124	O.V.P INDICATE
8	1SS119	PROTECTOR
9	1SS119	PROTECTOR
10	TLR124	O.V.P INDICATE
11	RD8.2ES-T1B2	REFERENCE
12	1SS119	MIX.
13	1SS119	MIX.
14	1SS119	MIX.
15	1SS119	PROTECTOR
16	1SS119	PROTECTOR
17	RD8.2ES-T1B2	REFERENCE
18	1SS119	MIX.
19	1SS119	MIX.

HW board (MANUAL CONTROL)



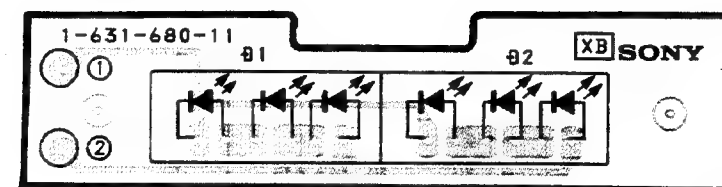
HX board (INPUT SELECT)



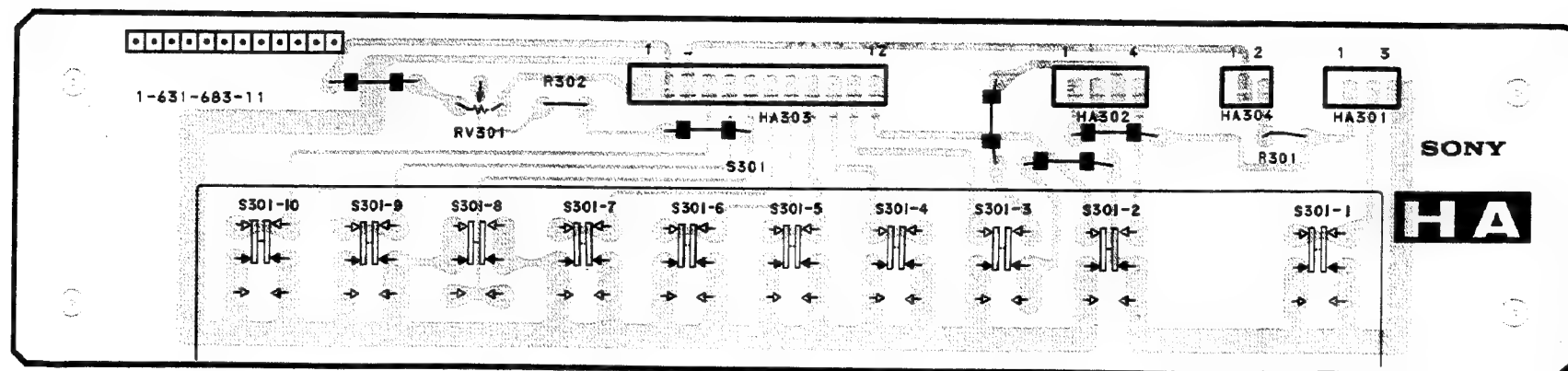
HH board (MANUAL VOLUME)



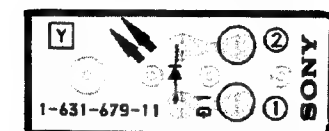
XB board (TALLY)



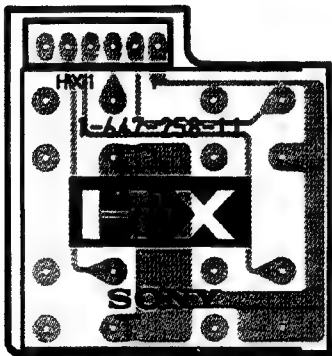
HA board (PANEL CONTROL)



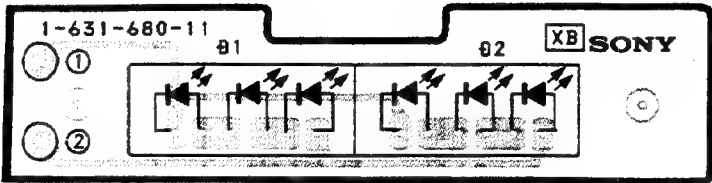
Y board (POWER LED)



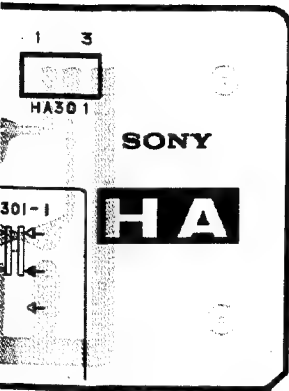
HX board (INPUT SELECT)



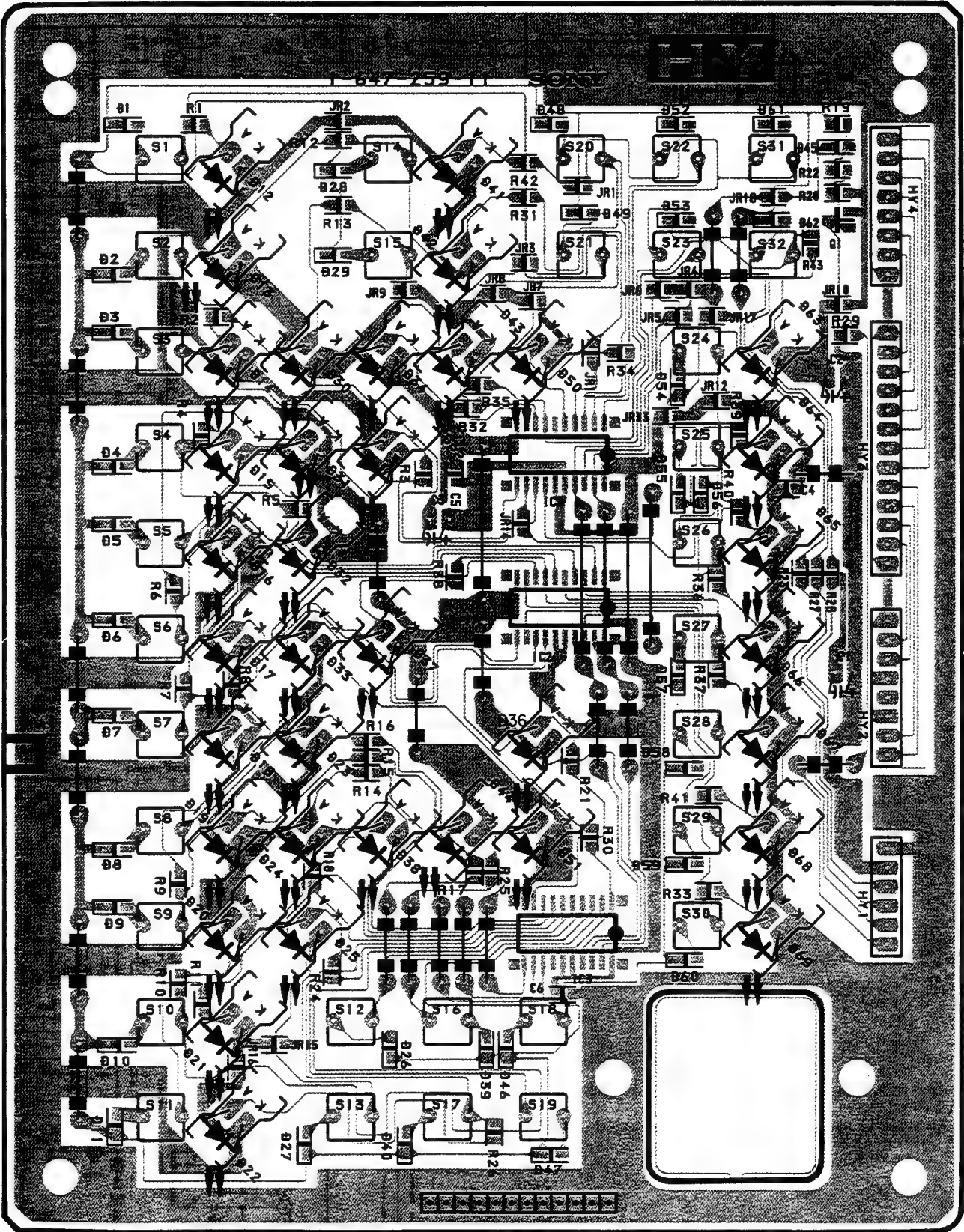
XB board (TALLY)



Y board (POWER LED)

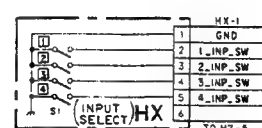
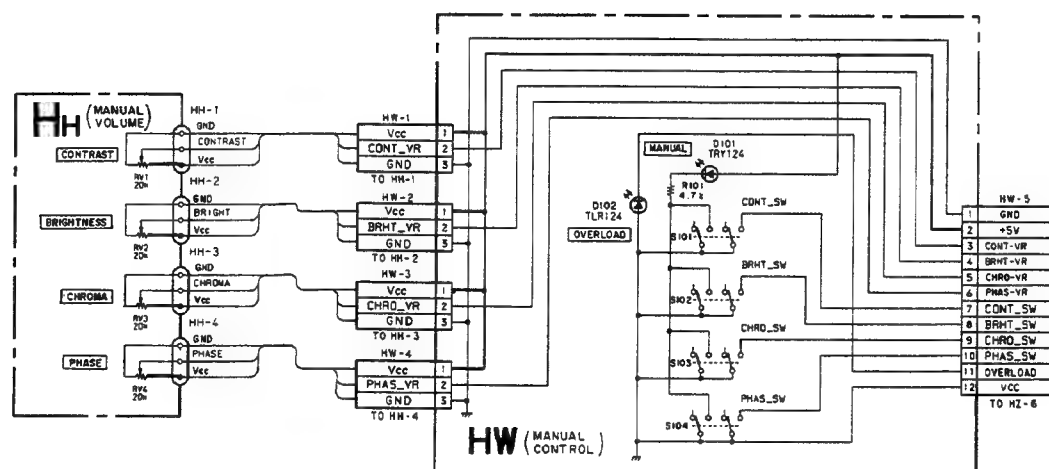
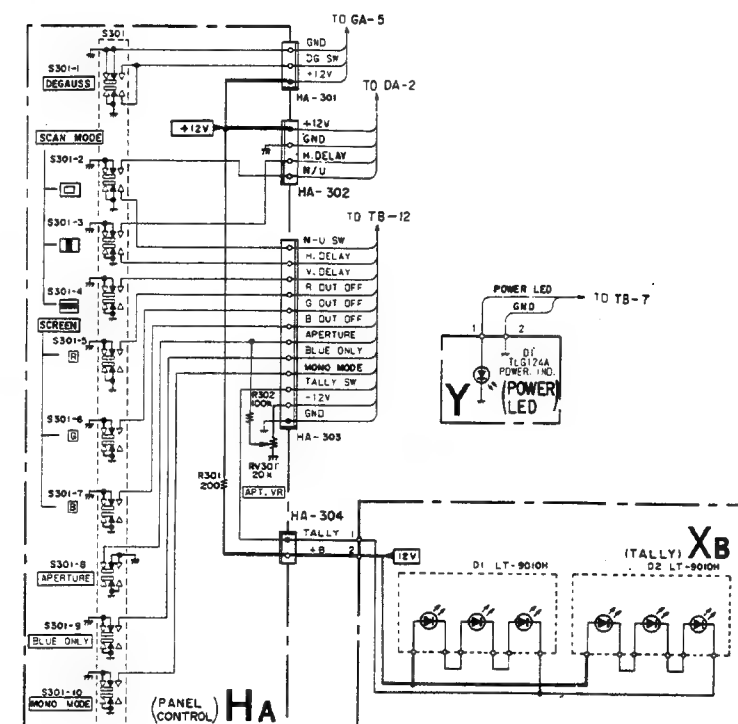
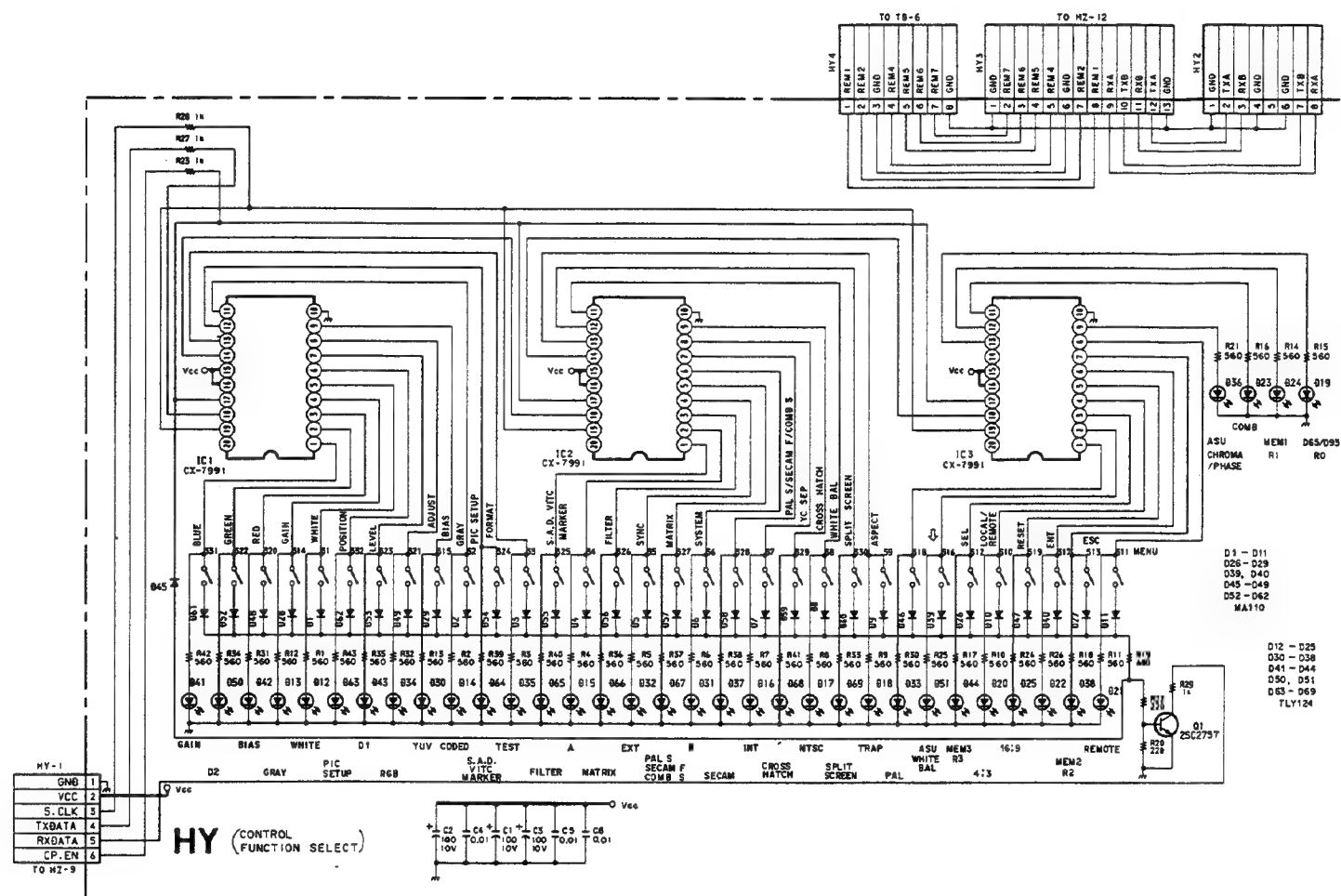


HY board (CONTROL FUNCTION SELECT)



HA, HH, HW, HX, HY, XB, Y HA, HH, HW, HX, HY, XB, Y

HA board (PANEL CONTROL), HH board (MANUAL VOLUME), HW board (MANUAL CONTROL),
HX board (INPUT SELECT), HY board (CONTROL FUNCTION SELECT), XB board (TALLY), Y board (POWER LED)

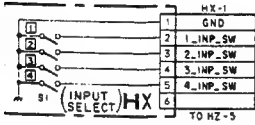
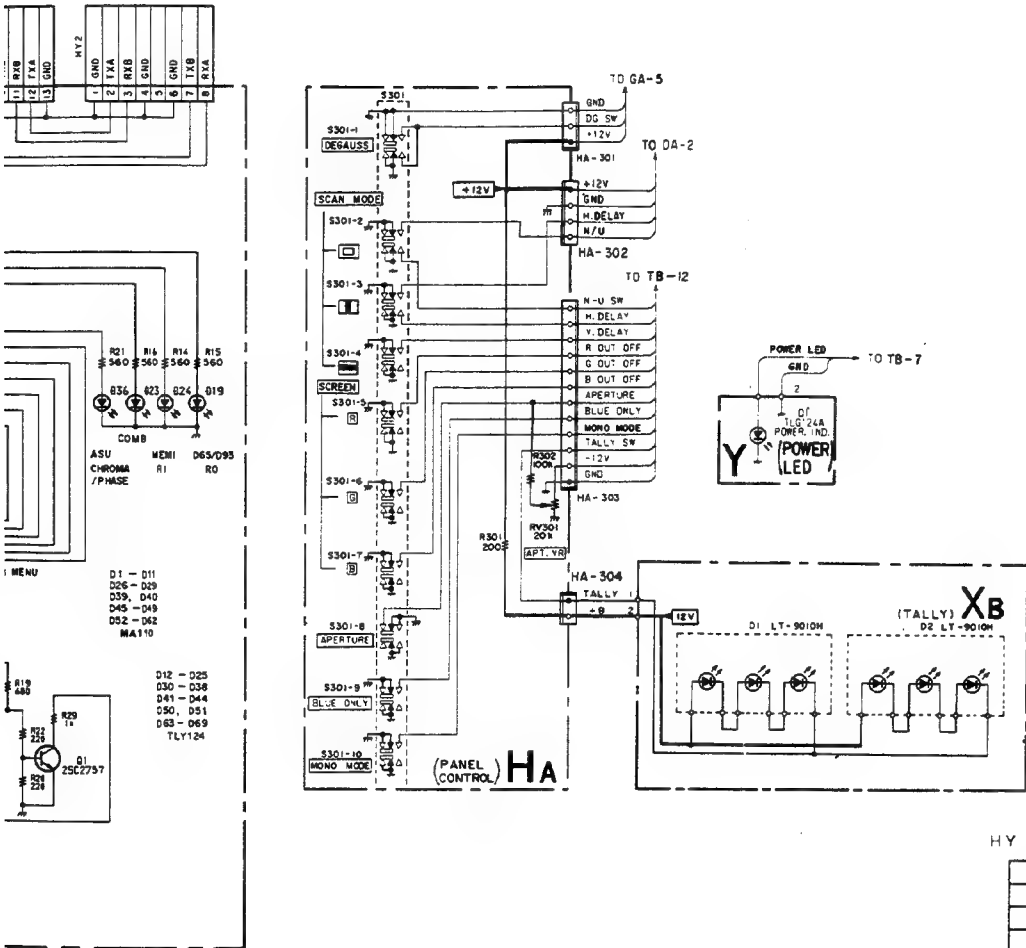


HW BOARD		
D 101	TLR124	INDICATOR
102	TLR124	INDICATOR

HY BOARD

IC1	CX-7991	KEY SCAN
2	CX-7991	KEY SCAN
3	CX-7991	KEY SCAN
Q1	2SC2757	KEY DETECTION
D1	MA110	PROTECTION
2	MA110	PROTECTION
3	MA110	PROTECTION
4	MA110	PROTECTION
5	MA110	PROTECTION
6	MA110	PROTECTION
7	MA110	PROTECTION
8	MA110	PROTECTION
9	MA110	PROTECTION
10	MA110	PROTECTION
11	MA110	PROTECTION
12	MA110	PROTECTION
13	TLY124	INDICATOR
14	TLY124	INDICATOR
15	TLY124	INDICATOR
16	TLY124	INDICATOR
17	TLY124	INDICATOR
18	TLY124	INDICATOR
19	TLY124	INDICATOR
20	TLY124	INDICATOR
21	TLY124	INDICATOR
22	TLY124	INDICATOR
23	TLY124	INDICATOR
24	TLY124	INDICATOR
25	TLY124	INDICATOR
26	MA110	PROTECTION
27	MA110	PROTECTION
28	MA110	PROTECTION
29	MA110	PROTECTION
30	TLY124	INDICATOR
31	TLY124	INDICATOR
32	TLY124	INDICATOR
33	TLY124	INDICATOR
34	TLY124	INDICATOR

ER LED)



Y BOARD

D1	TLG124A	POWER INDICATOR
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XB BOARD

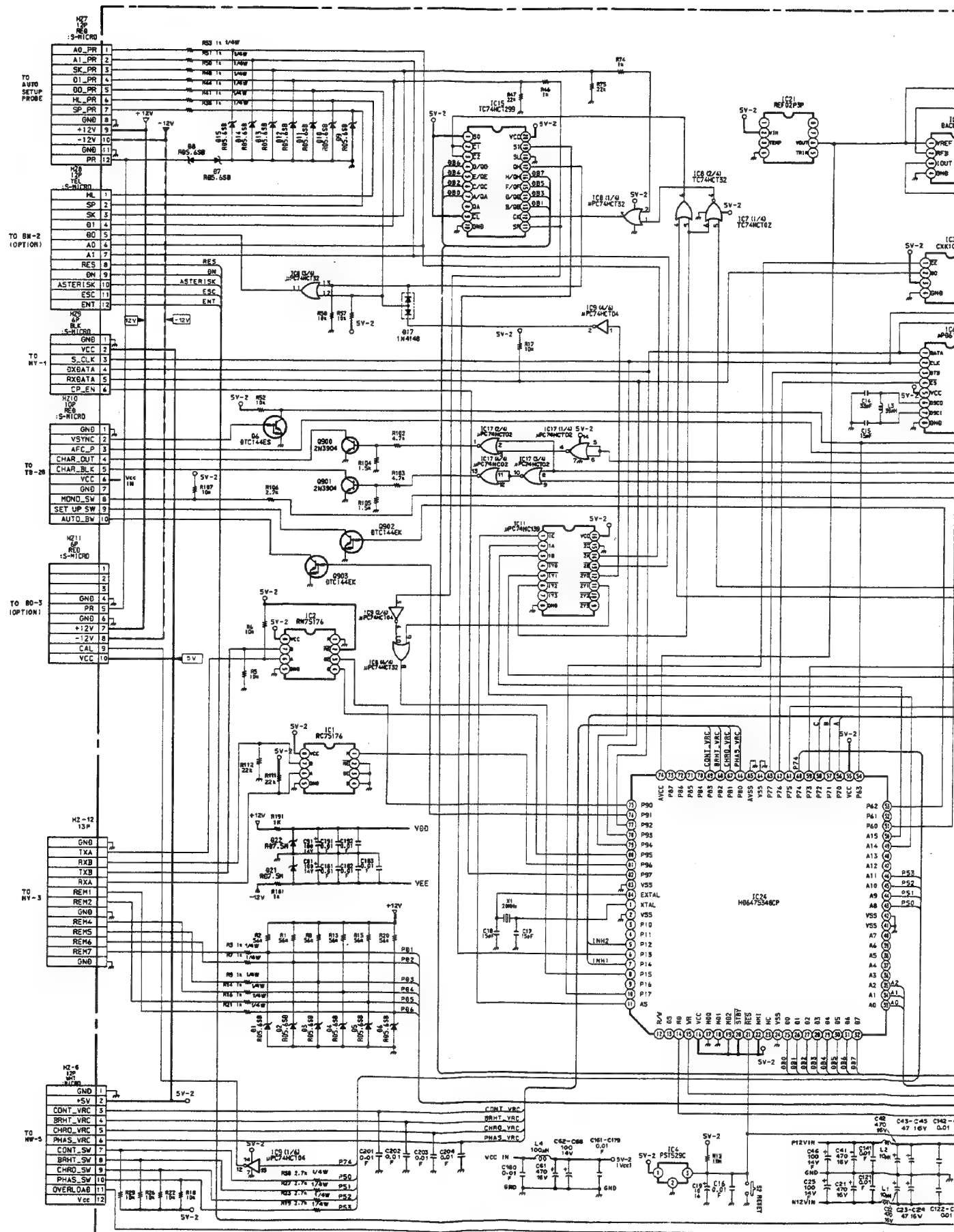
D1	LT-9010H	TALLY LAMP
D2	LT-9010H	TALLY LAMP

HY BOARD

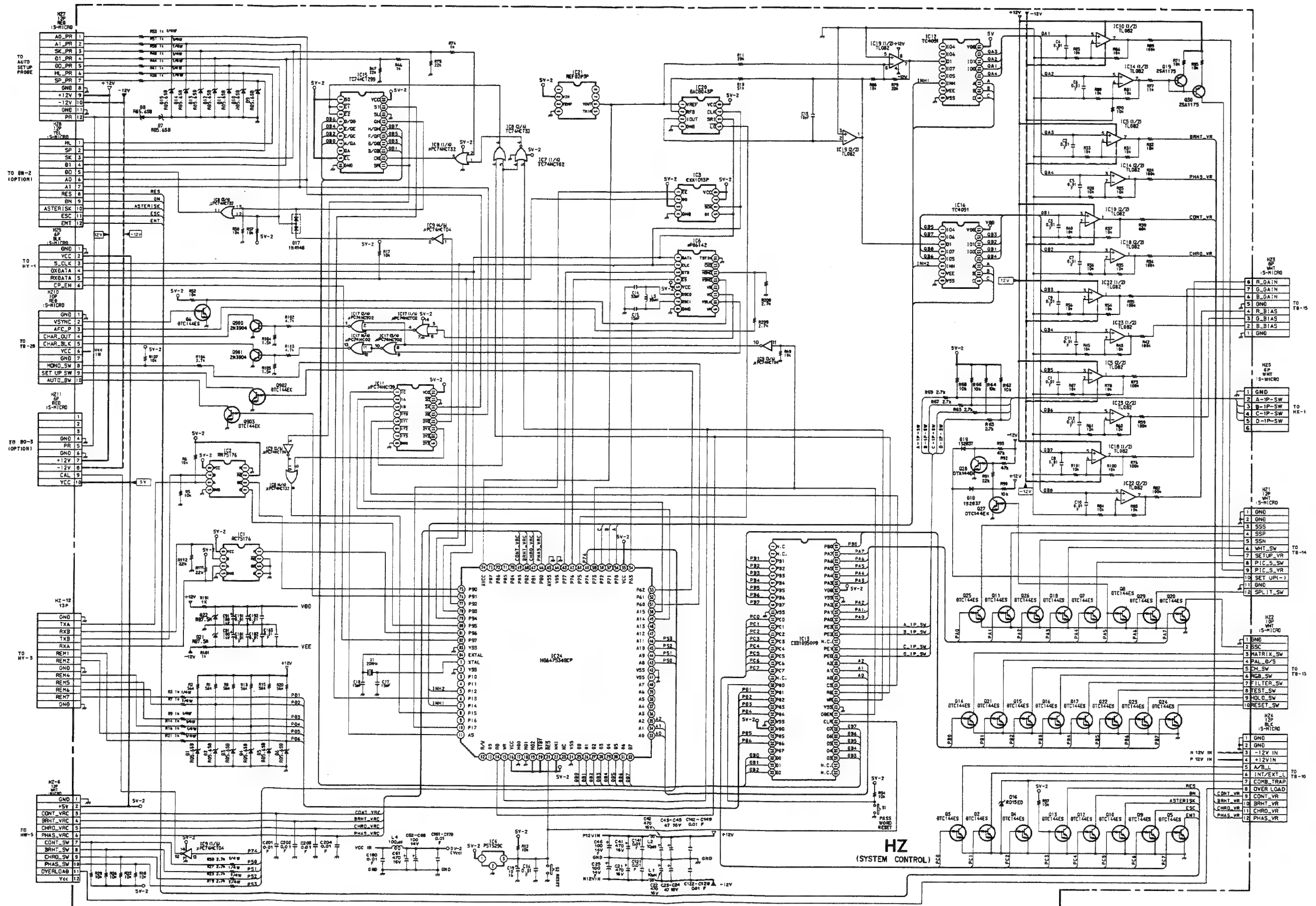
IC1	CX-7991	KEY SCAN	D 35	TLY124	INDICATOR
2	CX-7991	KEY SCAN	36	TLY124	INDICATOR
3	CX-7991	KEY SCAN	37	TLY124	INDICATOR
			38	TLY124	INDICATOR
D1	2SC2757	KEY DETECTION	39	MA110	PROTECTION
			40	MA110	PROTECTION
2	MA110	PROTECTION	41	TLY124	INDICATOR
3	MA110	PROTECTION	42	TLY124	INDICATOR
4	MA110	PROTECTION	43	TLY124	INDICATOR
5	MA110	PROTECTION	44	TLY124	INDICATOR
6	MA110	PROTECTION	45	MA110	PROTECTION
7	MA110	PROTECTION	46	MA110	PROTECTION
8	MA110	PROTECTION	47	MA110	PROTECTION
9	MA110	PROTECTION	48	MA110	PROTECTION
10	MA110	PROTECTION	49	MA110	PROTECTION
11	MA110	PROTECTION	50	TLY124	INDICATOR
12	MA110	PROTECTION	51	TLY124	INDICATOR
13	TLY124	INDICATOR	52	MA110	PROTECTION
14	TLY124	INDICATOR	53	MA110	PROTECTION
15	TLY124	INDICATOR	54	MA110	PROTECTION
16	TLY124	INDICATOR	55	MA110	PROTECTION
17	TLY124	INDICATOR	56	MA110	PROTECTION
18	TLY124	INDICATOR	57	MA110	PROTECTION
19	TLY124	INDICATOR	58	MA110	PROTECTION
20	TLY124	INDICATOR	59	MA110	PROTECTION
21	TLY124	INDICATOR	60	MA110	PROTECTION
22	TLY124	INDICATOR	61	MA110	PROTECTION
23	TLY124	INDICATOR	62	MA110	PROTECTION
24	TLY124	INDICATOR	63	MA110	PROTECTION
25	TLY124	INDICATOR	64	TLY124	INDICATOR
26	MA110	PROTECTION	65	TLY124	INDICATOR
27	MA110	PROTECTION	66	TLY124	INDICATOR
28	MA110	PROTECTION	67	TLY124	INDICATOR
29	MA110	PROTECTION	68	TLY124	INDICATOR
30	TLY124	INDICATOR	69	TLY124	INDICATOR
31	TLY124	INDICATOR			
32	TLY124	INDICATOR			
33	TLY124	INDICATOR			
34	TLY124	INDICATOR			

HZ BOARD

IC 1	SN75176BP	RECEIVER
2	SN75176BP	TRANSMITTER
3	X25040	NV RAM
4	PST529C	RESET
5	TL082M	OP AMP
6	UPD6142G-101	ON SCREEN D
7	TC74HCT02AF	NOR GATE
8	TC74HCT32AF	OR GATE
9	TC74HCT04AF	INVERTOR
10	TL082M	SAMPLE HOLD
11	TC74HCT139AF	DECODER
12	MC14051BF	DE-MULTIPLEXER
13	CX010950	I/O EXPANDER
14	TL082M	SAMPLE HOLD
15	TC74HC299AF	SHIFT REGISTER
16	MC14051BF	DE-MULTIPLEXER
17	TC74HCT02AF	NOR GATE
18	TL082M	SAMPLE HOLD
19	TL082M	SAMPLE HOLD
20	DAC8043GP	D/A CONNECTOR
21	REF02EZ	REF. VOLTAGE
22	TL082M	SAMPLE HOLD
23	TL082M	SAMPLE HOLD
24	HD6475368CP-BVM	CPU
0 2	DTC144EK	OUTPUT BUFFER
3	DTC144EK	OUTPUT BUFFER
4	DTC144EK	OUTPUT BUFFER
5	DTC144EK	OUTPUT BUFFER
6	DTC144EK	OUTPUT BUFFER
7	DTC144EK	OUTPUT BUFFER
8	DTC144EK	OUTPUT BUFFER
9	DTC144EK	OUTPUT BUFFER
10	DTC144EK	OUTPUT BUFFER
11	DTC144EK	OUTPUT BUFFER
12	DTC144EK	OUTPUT BUFFER
13	DTC144EK	OUTPUT BUFFER
14	DTC144EK	OUTPUT BUFFER
15	DTC144EK	OUTPUT BUFFER
16	DTC144EK	OUTPUT BUFFER
17	DTC144EK	OUTPUT BUFFER
18	DTC144EK	OUTPUT BUFFER
19	2SA1226	OUTPUT BUFFER
20	DTC144EK	OUTPUT BUFFER
21	DTC144EK	OUTPUT BUFFER
22	DTC144EK	OUTPUT BUFFER
23	DTC144EK	OUTPUT BUFFER
24	DTC144EK	OUTPUT BUFFER
25	DTC144EK	OUTPUT BUFFER
26	DTC144EK	OUTPUT BUFFER
27	DTC144EK	OUTPUT BUFFER
28	DTC144EK	OUTPUT BUFFER
29	DTC144EK	OUTPUT BUFFER
30	2SA1226	OUTPUT BUFFER
900	2SC1623	OUTPUT BUFFER
901	2SC1623	OUTPUT BUFFER
902	DTC144EK	OUTPUT BUFFER
903	DTC144EK	OUTPUT BUFFER
0 1	RD5.6ES-T1B	PROTECTION
2	RD5.6ES-T1B	PROTECTION
3	RD5.6ES-T1B	PROTECTION
4	RD5.6ES-T1B	PROTECTION
5	RD5.6ES-T1B	PROTECTION
6	RD5.6ES-T1B	PROTECTION
7	RD5.6ES-T1B	PROTECTION
8	RD5.6ES-T1B	PROTECTION
9	RD5.6ES-T1B	PROTECTION
10	RD5.6ES-T1B	PROTECTION
11	RD5.6ES-T1B	PROTECTION
12	RD5.6ES-T1B	PROTECTION
13	RD5.6ES-T1B	PROTECTION
14	RD5.6ES-T1B	PROTECTION
15	RD5.6ES-T1B	PROTECTION
17	1S2835	SWITCH
18	1S2837	SWITCH
19	1S2837	SWITCH
21	RD7.5W-T1B2	-7.5V REG
22	RD7.5W-T1B2	+7.5V REG

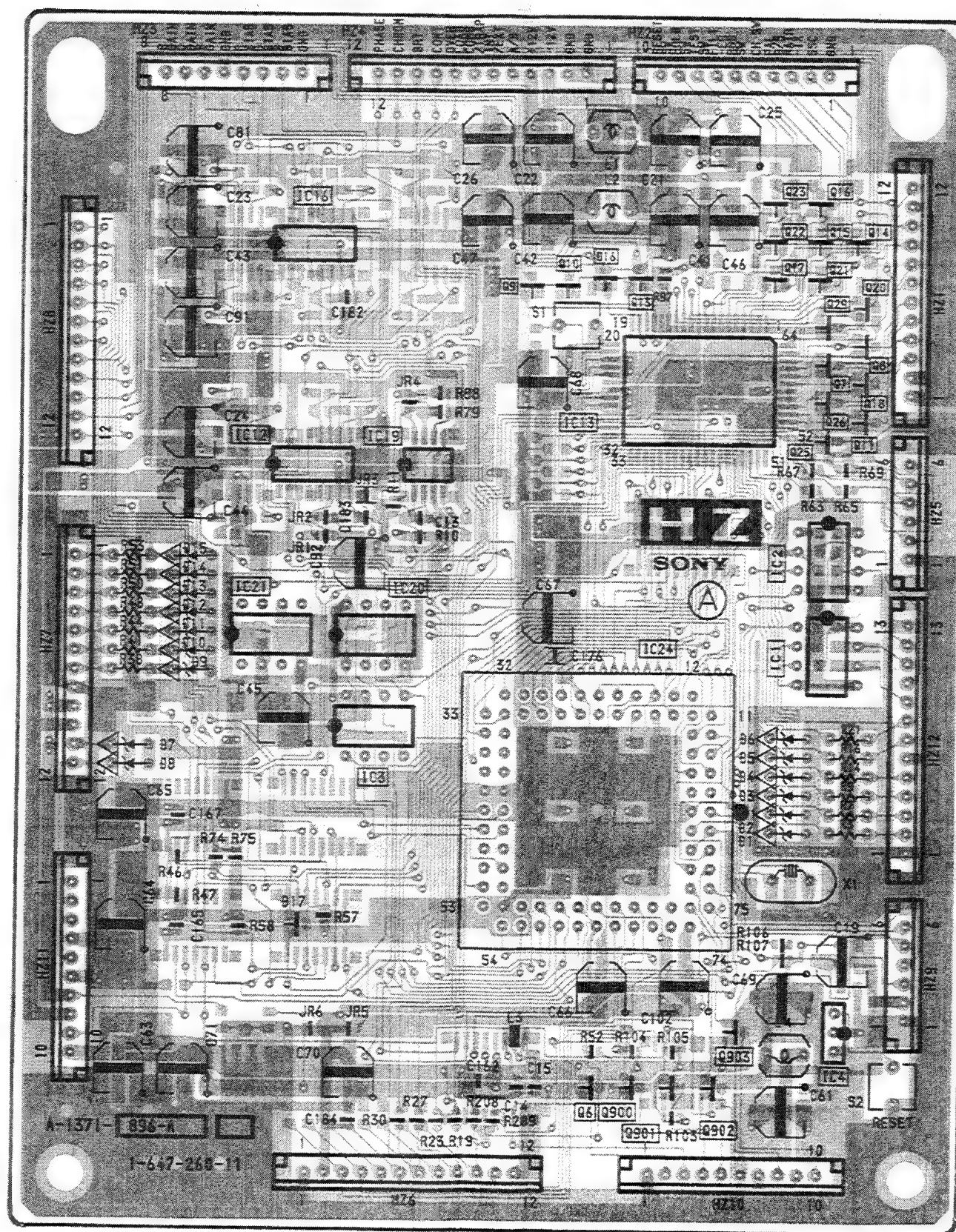


HZ HZ



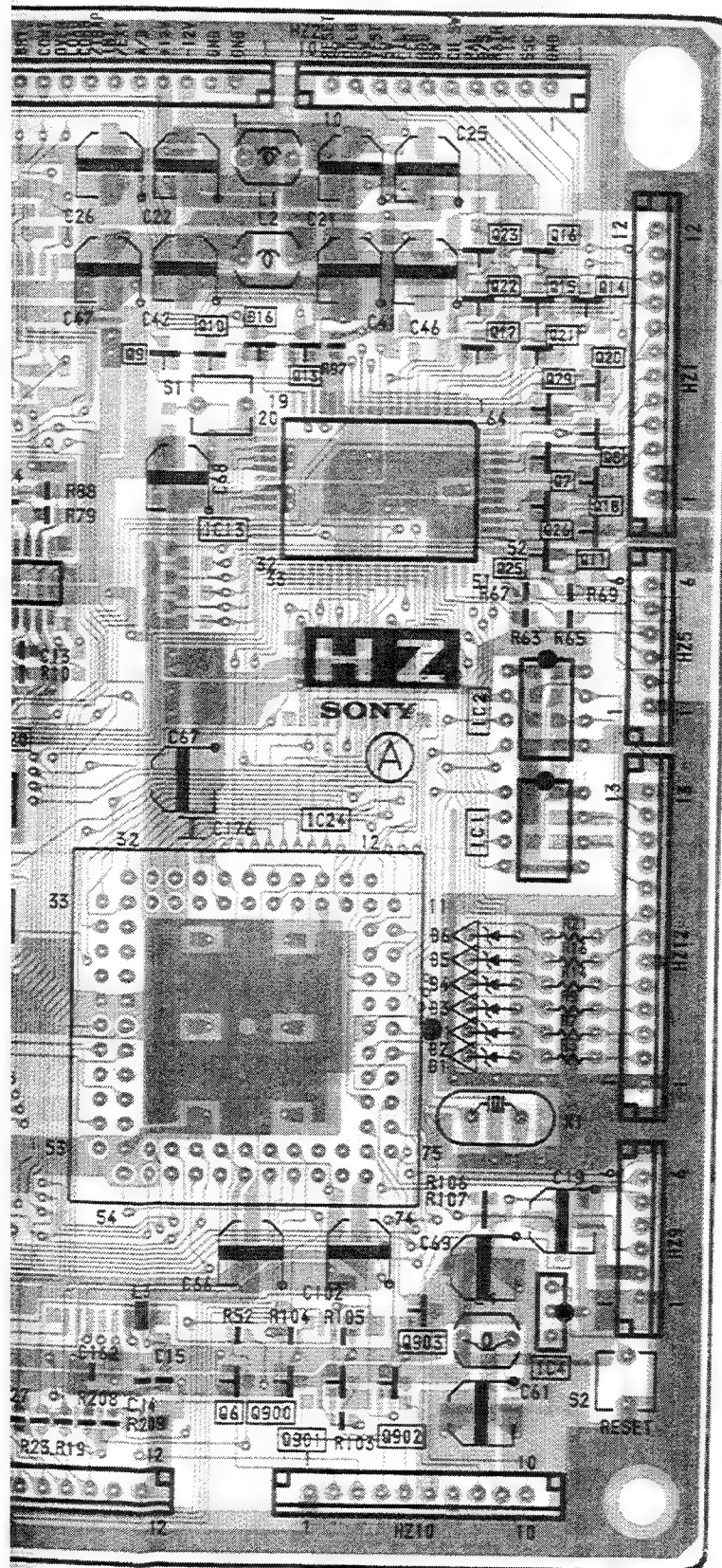
— CONDUCTOR SIDE —

IC		Q	D
		903 6 900 901 902	
16		23 16 22 15 14 9 10 13 17 21 20 29 8 7 18 26 11 25	16
	13		
12 19			
	2		15 14 13 12 11 10 9
21 20	I		
3			7 6 8 5 4 3 2 I
24			17
4			

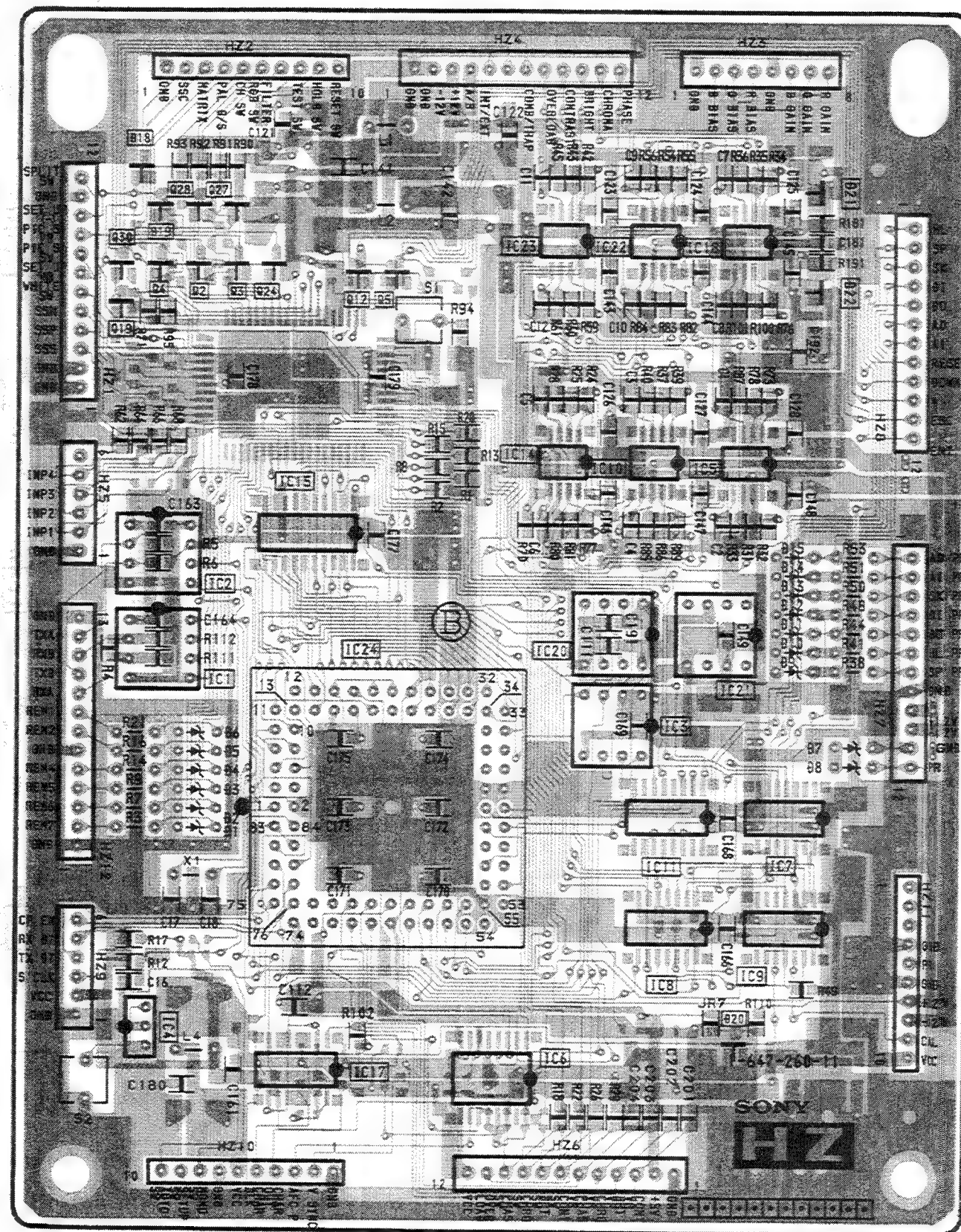


IC	Q	D
		18
	28,27	19 21
23 22 18	30 4 2 3 24	
	19 12 5	22
14 10 5		
2 15		
1 20 21		15 14 13 12 11 10 9
3		6 7 5 8 4 3 2 1
24 11 7		
8 9		
4		20
17 6		

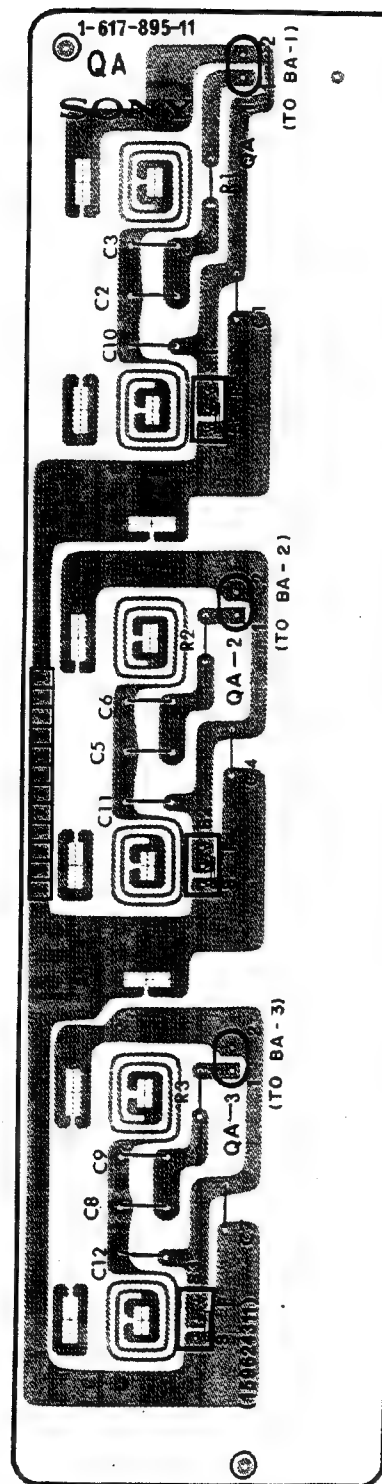
— COMPONENT SIDE —



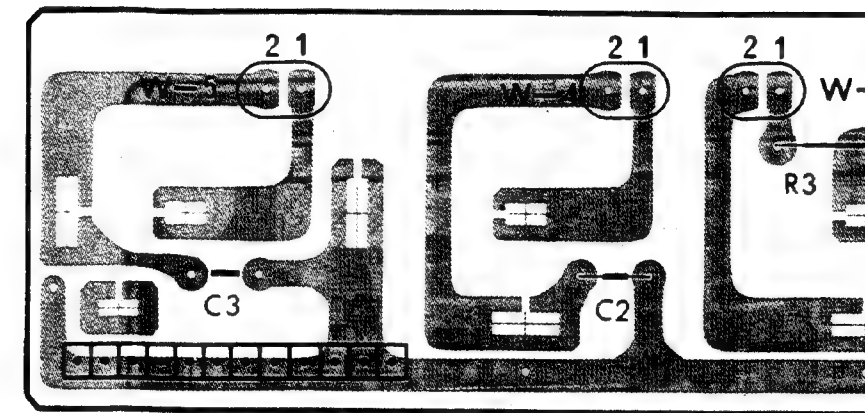
IC	Q	D
23 22 18	28, 27 30 4 2 3 24 19 12 5	18 19 21 22
14 10 5		
2 15		15 14 13 12 11 10 9
1 20 21		
3		7 8
24 11 7		
8 9		
4		20
17 6		



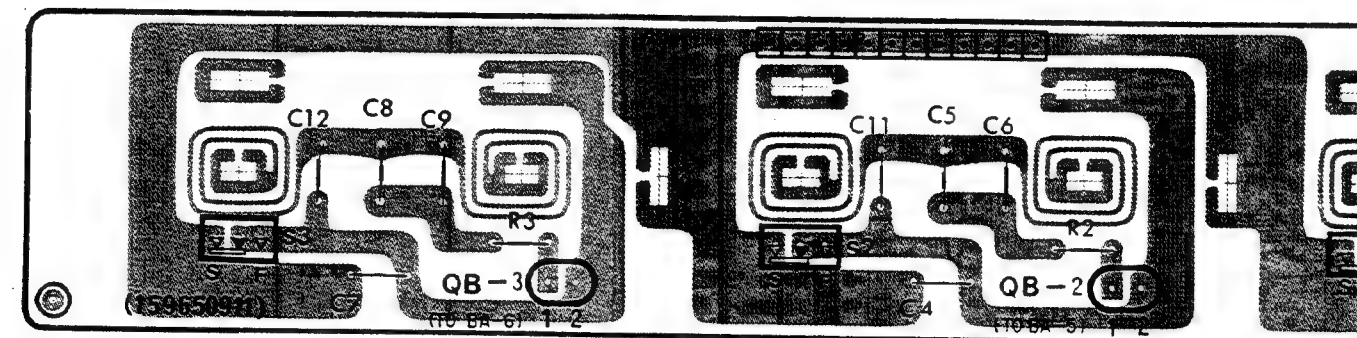
QA board (COMPOSITE VIDEO INPUT)



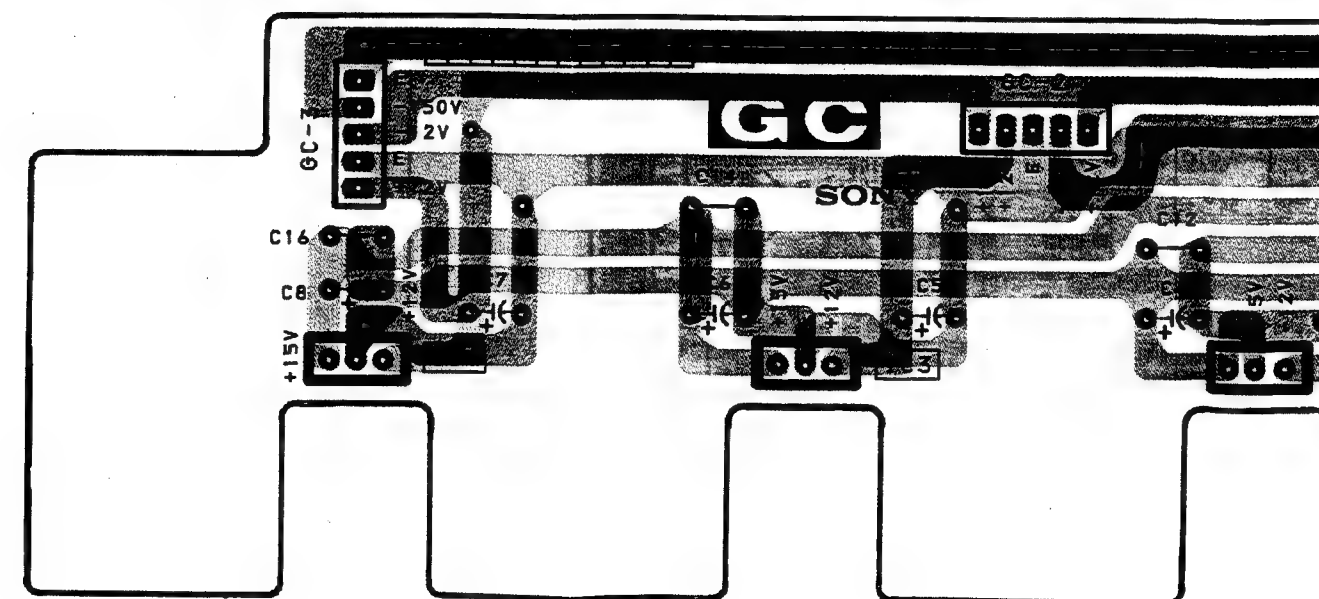
W board (RGB/COMPONENT OUT)



QB board (RGB/COMPONENT INPUT)



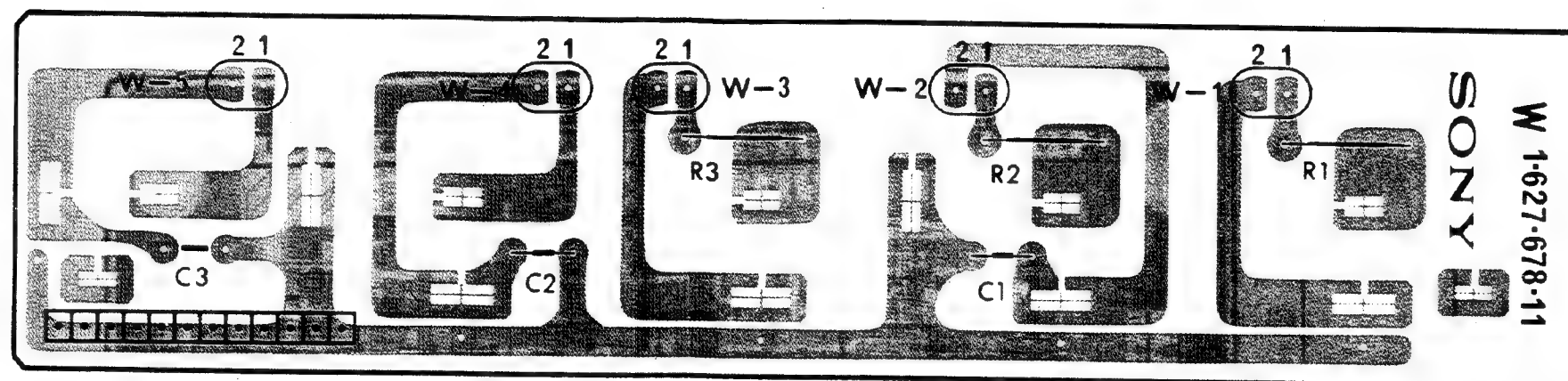
GC board (REG)



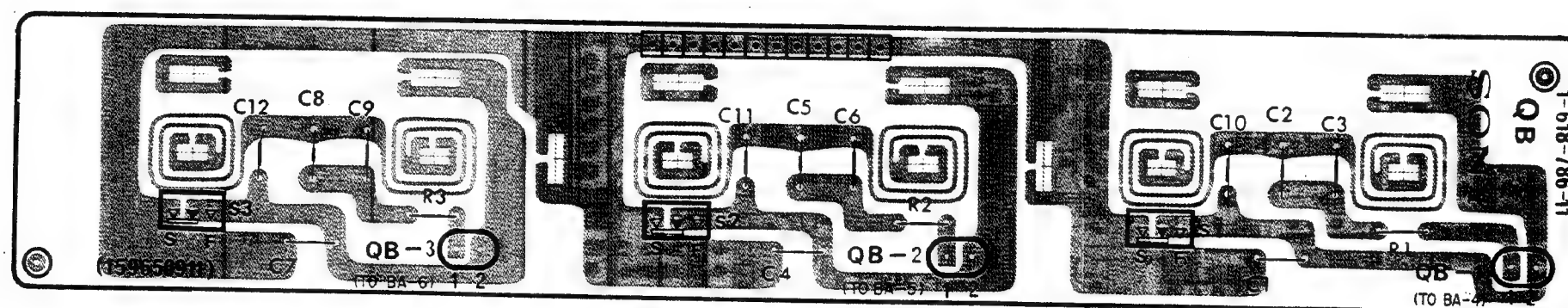
GC, QA, QB, V, W

COMPOSITE VIDEO INPUT)

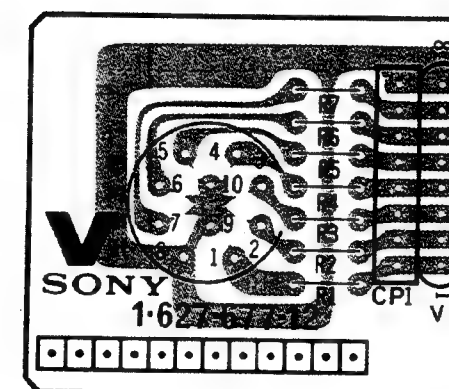
W board (RGB/COMPONENT OUT)



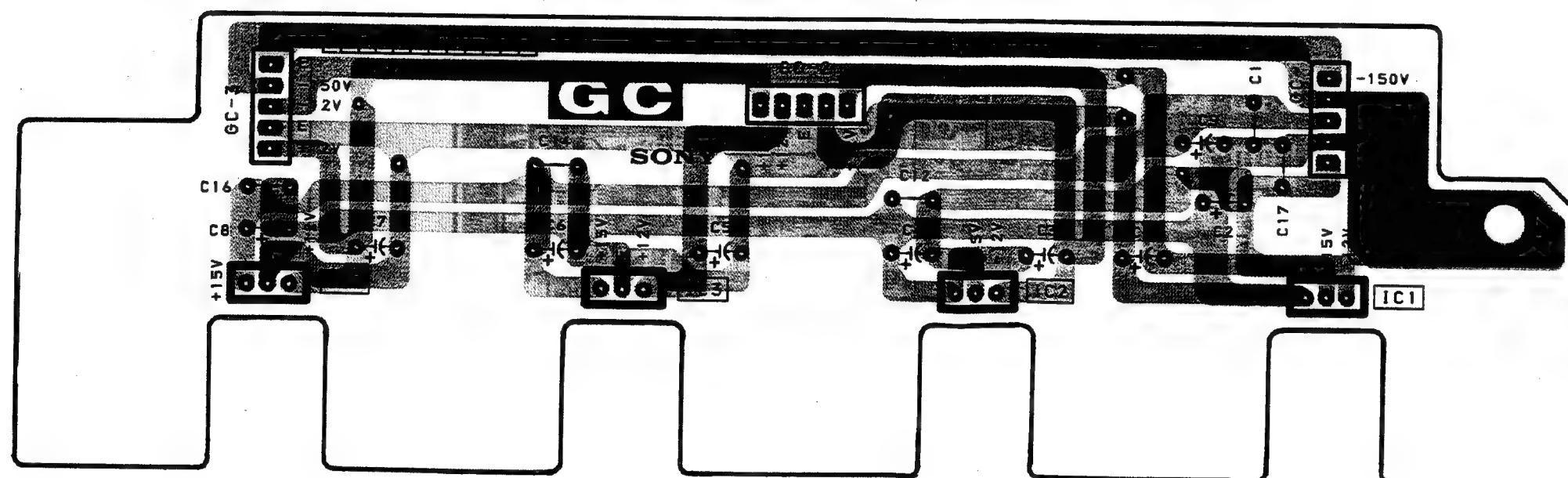
QB board (RGB/COMPONENT INPUT)



V board (REMOTE)





GC board (REG)



5-91

5-92

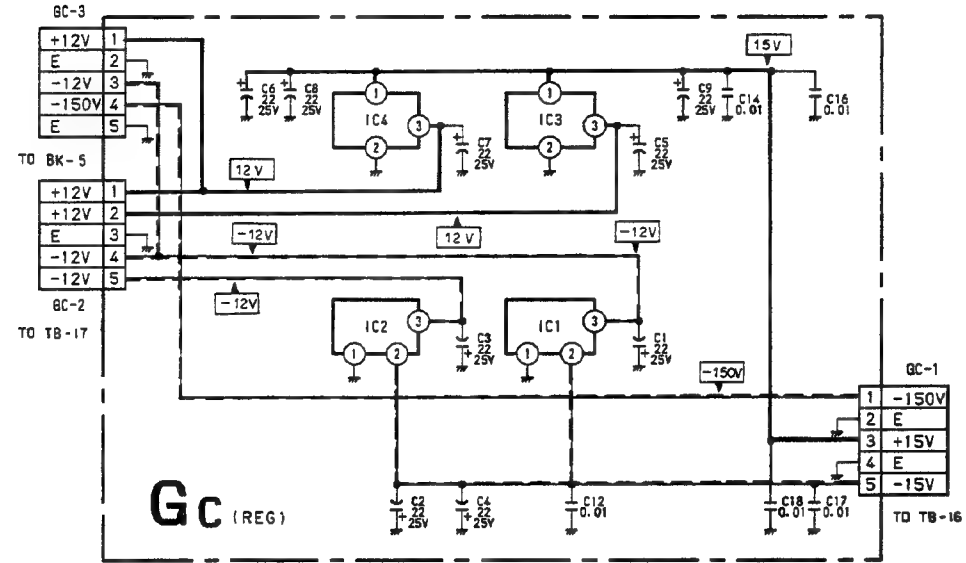
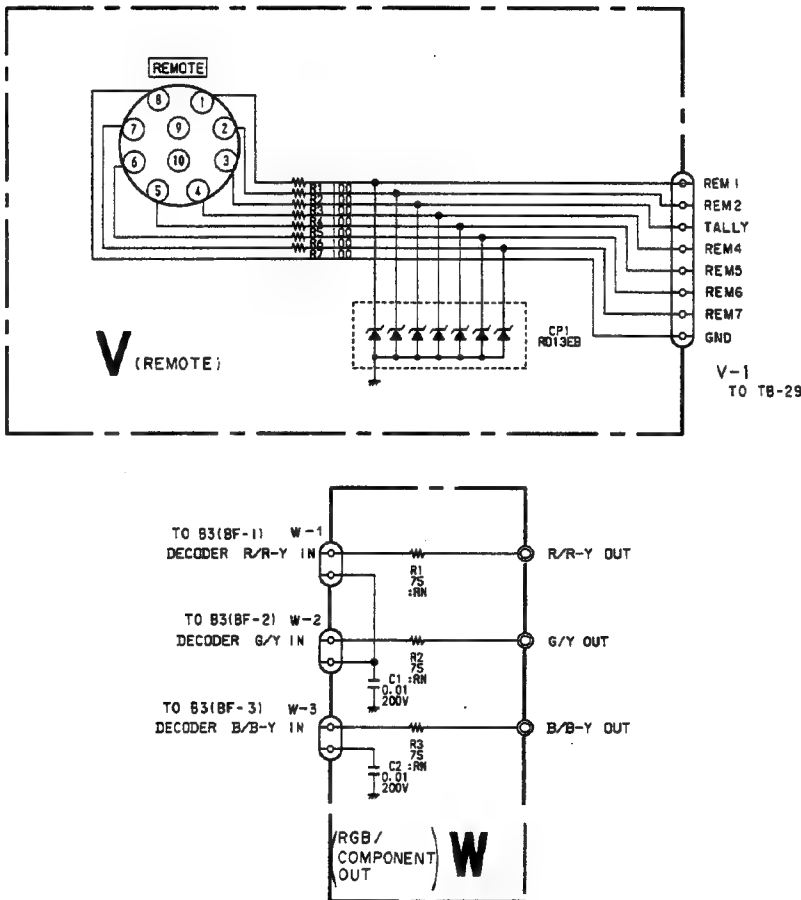
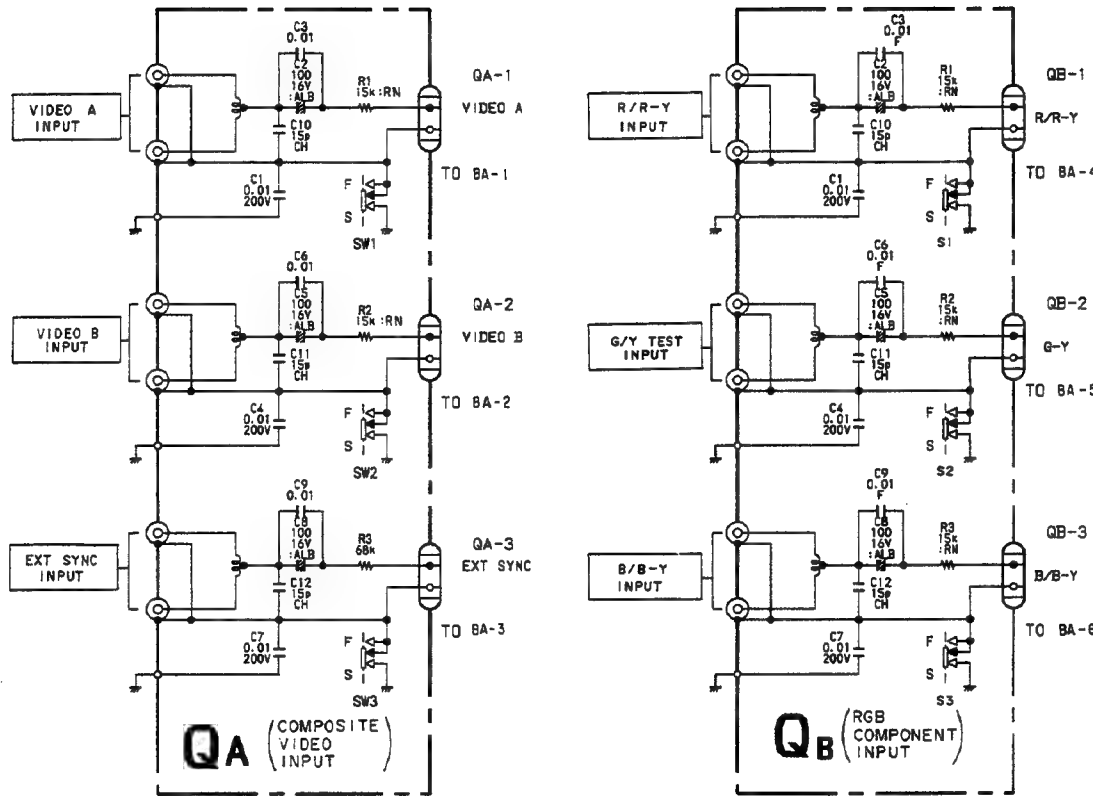
-  : Pattern from the side which enables seeing.
-  : Pattern of the rear side.

GC, QA, QB, V, W GC, QA, QB, V, W

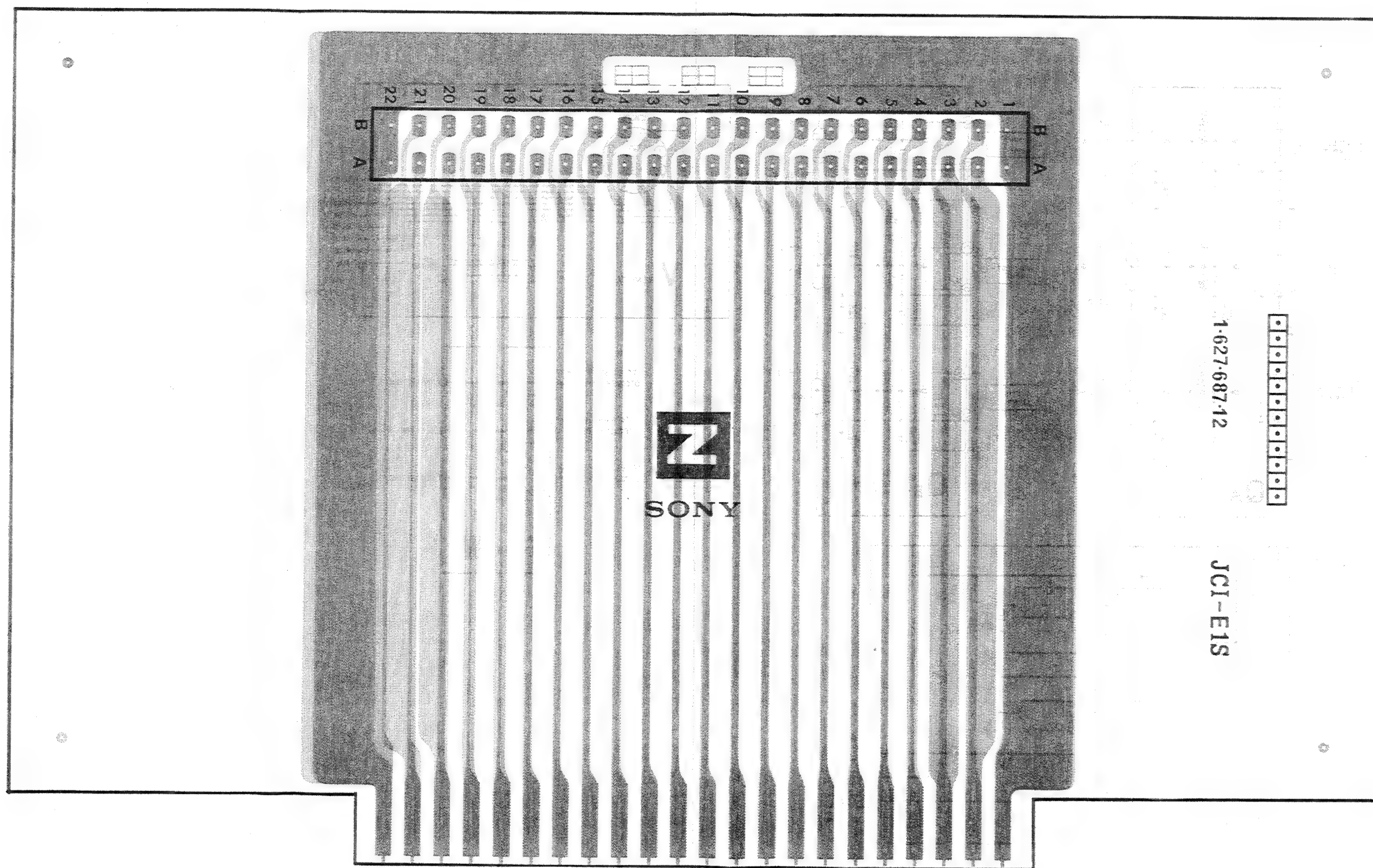
GC board (REG) QA board (COMPOSITE VIDEO INPUT) QB board (RGB/COMPONENT INPUT)
V board (REMOTE) W board (RGB/COMPONENT OUT)

GC BOARD

IC1	uPD7912H	-12V REG
2	uPD7912H	-12V REG
3	uPD7812H	+12V REG
4	uPD7812H	+12V REG



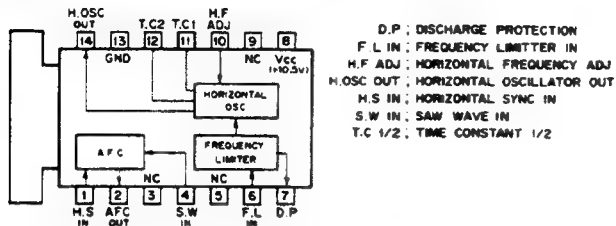
Z board (EXTENSION BOARD)



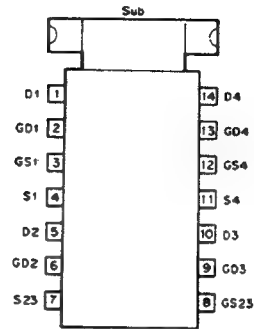
- : Pattern from the side which enables seeing.
- : Pattern of the rear side.

5-4. SEMICONDUCTORS

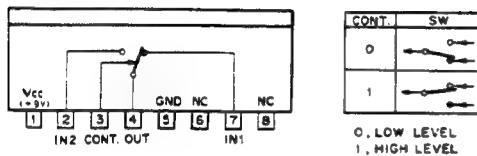
CX-158 (SONY)
HORIZONTAL DEFLECTION OSCILLATOR/FREQUENCY LIMITER
— TOP VIEW —



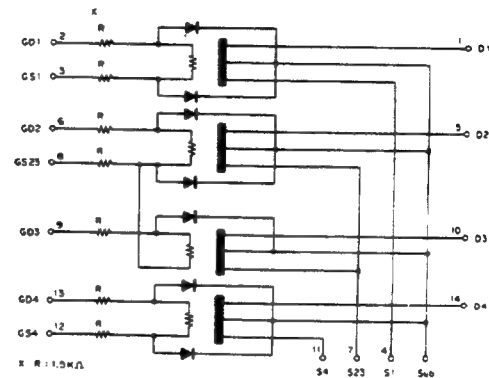
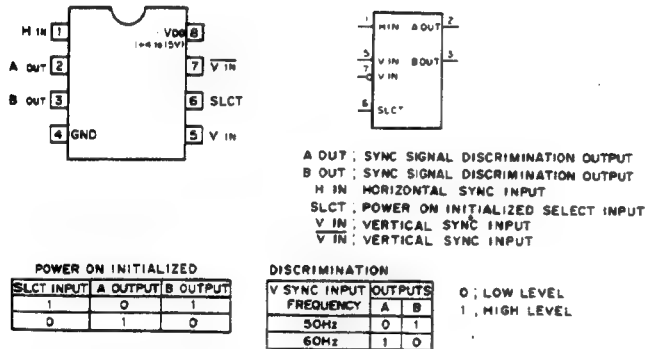
CX-718D (SONY)
SRG FET IC
— TOP VIEW —



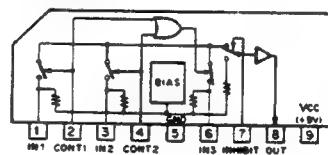
CX20061 (SONY)
ANALOG SWITCH
— SIDE VIEW —



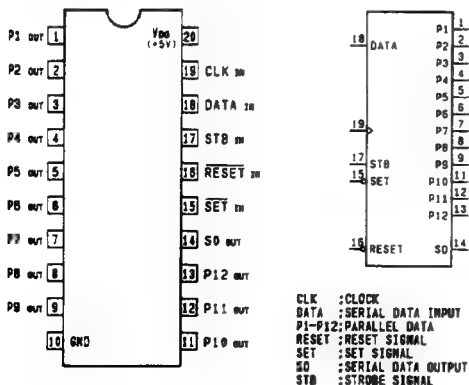
CX23025 (SONY)
C-MOS TV-VTR SYNC SIGNAL DISCRIMINATOR
— TOP VIEW —



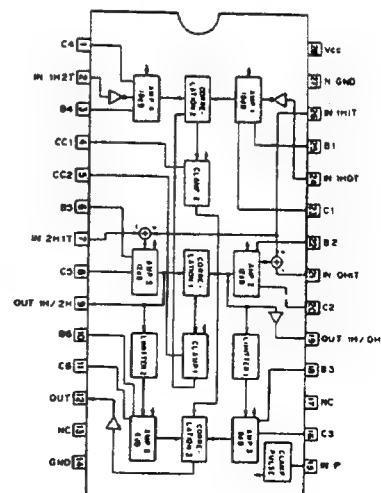
CX894 (SONY)
3 INPUT SWITCH
— SIDE VIEW —



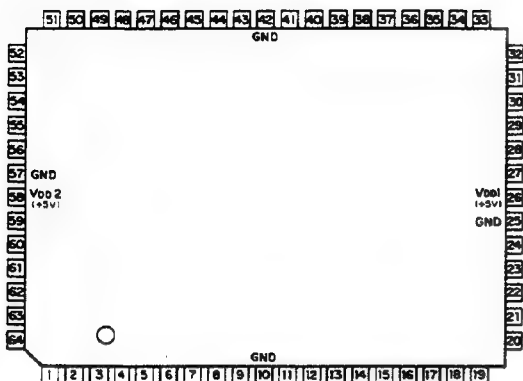
CX7991 (SONY)
C-MOS 12-BIT SERIAL TO PARALLEL CONVERTER
— TOP VIEW —



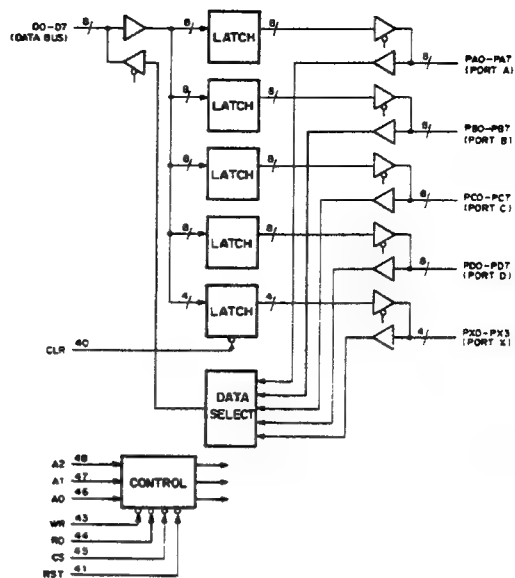
CXA1539P



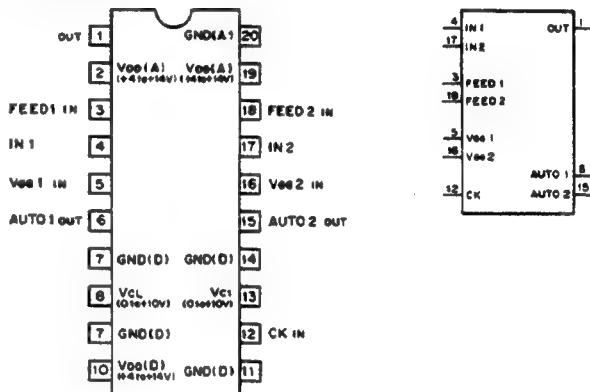
CXD1095Q (SONY) FLAT PACKAGE
C-MOS I/O PORT EXPANDER
— TOP VIEW —



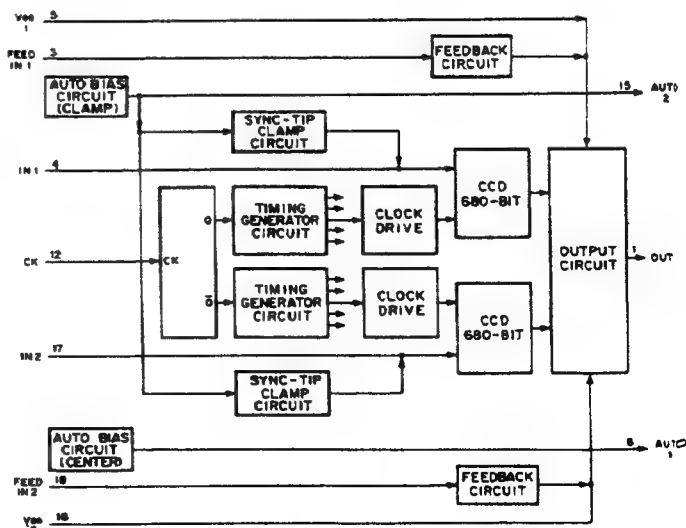
PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL	PIN NO.	IN	OUT	SYMBOL
1			NC	17			PC6	33			NC	49			PX0
2			NC	18			PC7	34			NC	50			PX1
3			PB1	19			NC	35			D3	51			NC
4			PB2	20			PD0	36			D4	52			PX2
5			PB3	21			PD1	37			D5	53			PX3
6			PB4	22			PD2	38			D6	54			PA0
7			PB5	23			PD3	39			D7	55			PA1
8			PB6	24			PD4	40			CLR	56			PA2
9			PB7	25			GND	41			RST	57			GND
10			GND	26			VDD(+5V)	42			GND	58			VDD(+5V)
11			PC0	27			PD5	43			WR	59			PA3
12			PC1	28			PD6	44			RD	60			PA4
13			PC2	29			PD7	45			CS	61			PA5
14			PC3	30			D0	46			A0	62			PA6
15			PC4	31			D1	47			A1	63			PA7
16			PC5	32			D2	48			A2	64			PB0



CXL1009P (SONY)
C-MOS CCD SIGNAL PROCESSOR FOR TBC
— TOP VIEW —



OUT : OUT PUT
FEED 1/2 IN : FEEDBACK INPUT 1/2
IN 1/2 : INPUT 1/2
VDD 1/2 IN : GATE INPUT 1/2
AUTO 1/2 OUT : AUTO BIAS OUTPUT 1/2
CK IN : CLOCK INPUT
VCL : POWER SUPPLY 2(DIGITAL)
VDD(A)/(D) : POWER SUPPLY 1(ANALOG)/(DIGITAL)
GND(A)/(D) : GROUND(ANALOG)/(DIGITAL)

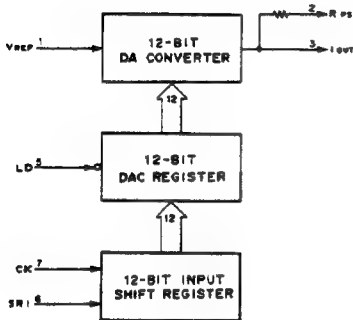
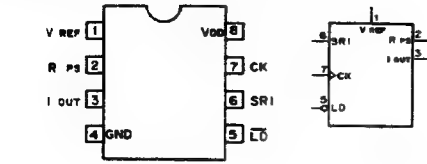


CS	RD	WR	A2	A1	A0	MODE
0	0	1	0	0	0	PORT A → DATA BUS
0	0	1	0	0	1	PORT B → DATA BUS
0	0	1	0	1	0	PORT C → DATA BUS
0	0	1	0	1	1	PORT D → DATA BUS
0	0	1	1	0	0	PORT X → DATA BUS
0	0	1	1	0	1	---
0	0	1	1	1	0	---
0	0	1	1	1	1	---
0	1	0	0	0	0	DATA BUS → PORT A
0	1	0	0	0	1	DATA BUS → PORT B
0	1	0	0	1	0	DATA BUS → PORT C
0	1	0	0	1	1	DATA BUS → PORT D
0	1	0	1	0	0	DATA BUS → PORT X
0	1	0	1	0	1	---
0	1	0	1	1	0	DATA BUS → CTL REG.1
0	1	0	1	1	1	DATA BUS → CTL REG.2
1	X	X	X	X	X	DATA BUS; HI-Z

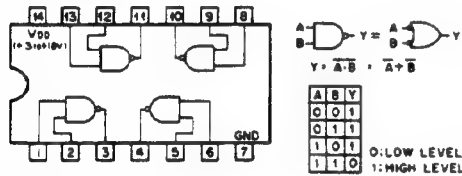
0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE
HI-Z: HIGH IMPEDANCE

DO-D7: DATA BUS INPUTS/OUTPUTS
CS: CHIP SELECT INPUT
RD: READ STROBE INPUT
WR: WRITE STROBE INPUT
A0-A2: ADDRESS INPUT
RST: RESET INPUT
CLR: CLEAR INPUT
PA0-PA7: PORT A INPUTS/OUTPUTS
PB0-PB7: PORT B INPUTS/OUTPUTS
PC0-PC7: PORT C INPUTS/OUTPUTS
PD0-PD7: PORT D INPUTS/OUTPUTS
PX0-PX3: PORT X INPUTS/OUTPUTS

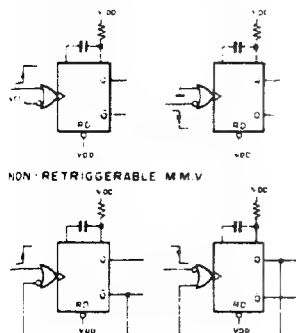
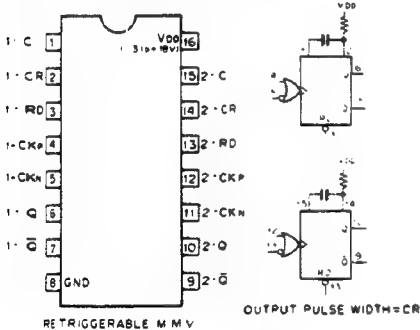
DAC8043GP (PMI)
C-MOS 12-BIT SERIAL INPUT D/A CONVERTER
- TOP VIEW -



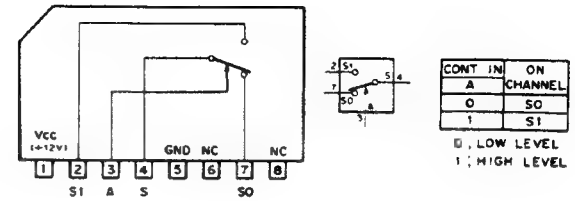
HD14011BP (HITACHI)
MC14011BCP (MOTOROLA)
TC4011BP (TOSHIBA)
uPD4011BC (NEC)
C-MOS 2-INPUT NAND GATE
- TOP VIEW -



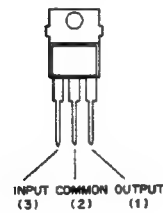
HD14538BP (HITACHI)
C-MOS DUAL RETRIGGERABLE NON RETRIGGERABLE
MONOSTABLE MULTIVIBRATOR
- TOP VIEW -



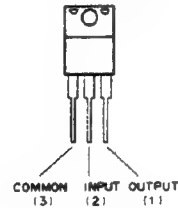
LA7016 (SANYO)
ELECTRONIC SWITCH
- SIDE VIEW -



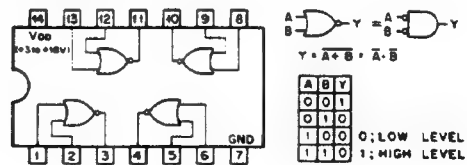
LM7812CT
POSITIVE VOLTAGE REGULATOR (500mA)
- FRONT VIEW -



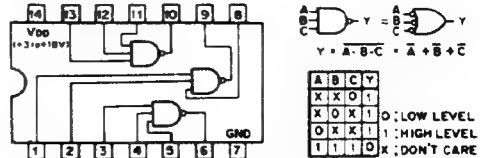
LM7912CT (NS) -12V
NEGATIVE VOLTAGE REGULATOR
- FRONT VIEW -



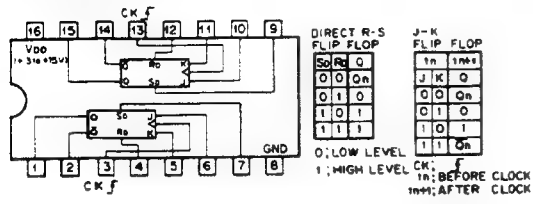
MC14001BCP (MOTOROLA)
uPD4001BC (NEC)
C-MOS 2-INPUT NOR GATE
- TOP VIEW -



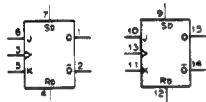
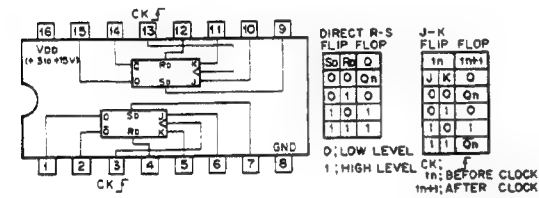
MC14023BCP (MOTOROLA)
TC4023BP (TOSHIBA)
C-MOS 3-INPUT NAND GATE
- TOP VIEW -



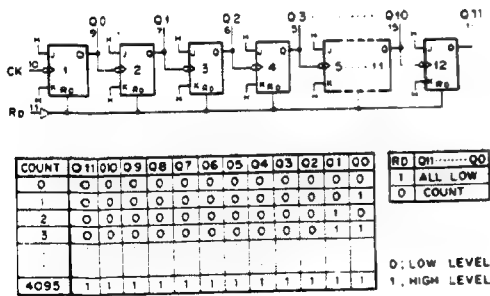
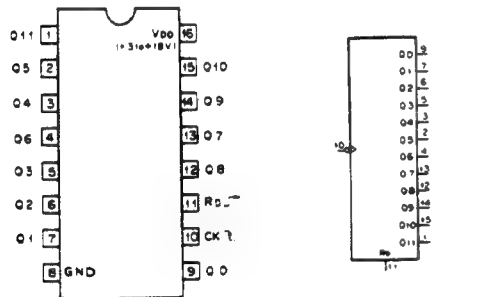
MB84027B (FUJITSU)
TC504027BP (TOSHIBA)
C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —



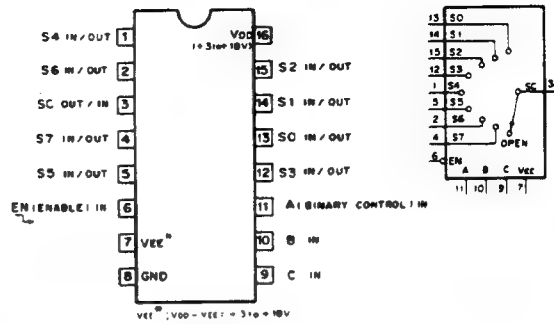
MC14027BCP (MOTOROLA)
C-MOS J-K MASTER SLAVE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —



MC14040BCP (MOTOROLA)
TC4040BP (TOSHIBA)
C-MOS 12-STAGE RIPPLE CARRY BINARY COUNTER/DRIVER
— TOP VIEW —



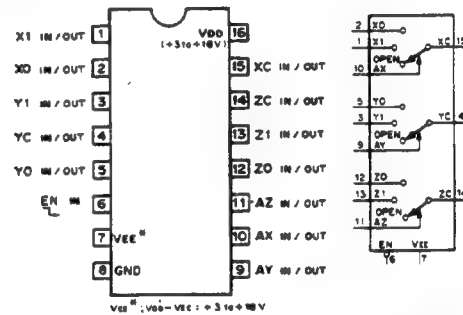
MC14051BF
C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —



EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

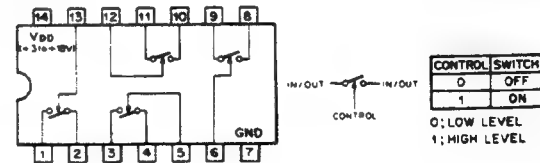
MC14053BCP (MOTOROLA)
TC4053BP (TOSHIBA)
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —



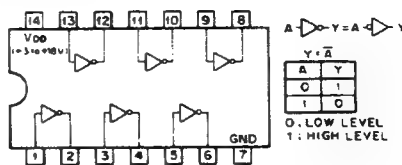
CONT INPUTS	EN	A (X,Y,Z)	ON CHANNEL
0	0	0	0
0	1	1	1
1	X	X	OPEN

0: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE

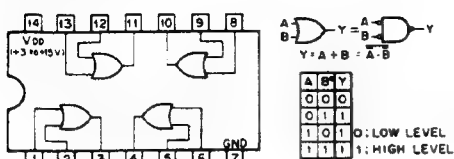
MC14066BCP
C-MOS BILATERAL ANALOG SWITCH
— TOP VIEW —



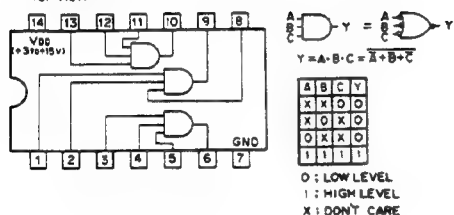
MC14069UBCP
uPD4069UBC (NEC)
— TOP VIEW —



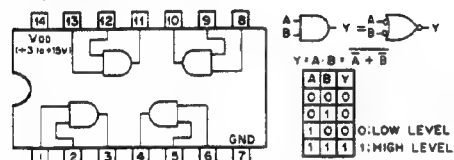
MC14071BCP (MOTOROLA)
TC4071BP (TOSHIBA)
UPD4071BC (NEC)
C-MOS 2-INPUT OR GATE
— TOP VIEW —



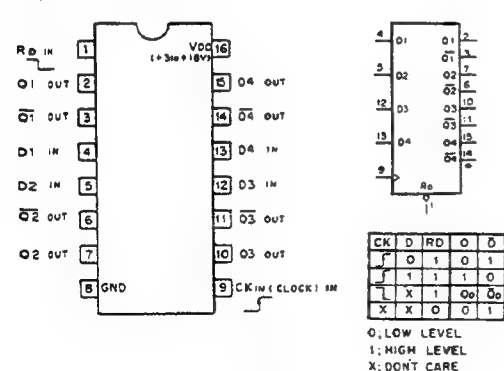
MC14073BCP (MOTOROLA)
TC4073BP (TOSHIBA)
C-MOS 3-INPUT POSITIVE AND GATE
— TOP VIEW —



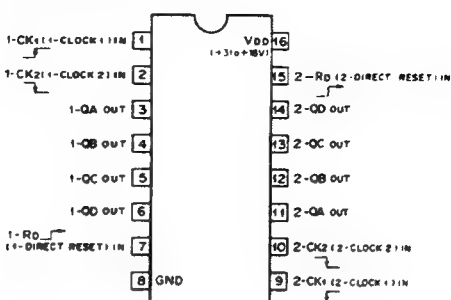
MC14081BCP (MOTOROLA)
TC4081BP (TOSHIBA)
UPD4081BC (NEC)
C-MOS 2-INPUT AND GATE
— TOP VIEW —



MC14175BCP (MOTOROLA)
C-MOS DECADE COUNTER/DIVIDER
— TOP VIEW —



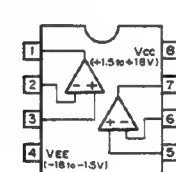
MC14520BCP (MOTOROLA)
TC4520BP (TOSHIBA)
C-MOS DUAL 4-BIT BINARY UP COUNTER
— TOP VIEW —



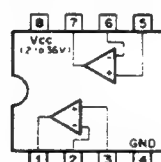
STATE	OUTPUTS
0	0 0 0 0 0
1	0 0 0 0 1
2	0 0 0 1 0
3	0 0 0 1 1
4	0 0 1 0 0
5	0 0 1 0 1
6	0 0 1 1 0
7	0 0 1 1 1
8	0 1 0 0 0
9	0 1 0 0 1
10	0 1 0 1 0
11	0 1 0 1 1
12	0 1 1 0 0
13	0 1 1 0 1
14	0 1 1 1 0
15	0 1 1 1 1

CK1 CK2 RD	ACTION
0 0 0	INCREMENT COUNTER
0 0 1	INCREMENT COUNTER
0 1 0	NO CHANGE
0 1 1	NO CHANGE
1 0 0	NO CHANGE
1 0 1	NO CHANGE
1 1 0	NO CHANGE
1 1 1	QA THRU QD = 0

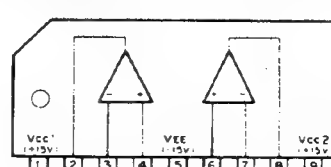
NJM082M (JRC) FLAT PACKAGE
UPC4082C
OPERATIONAL AMPLIFIER
(JFET INPUT)
— TOP VIEW —



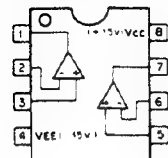
NJM2903D (JRC)
VOLTAGE COMPARATOR
— TOP VIEW —



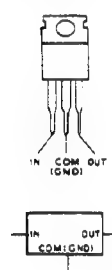
NJM4558S (JRC)
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER
— SIDE VIEW —



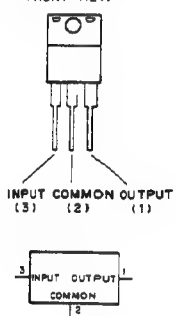
NJM4558D (JRC)
uPC4558C (NEC)
uPC4553C
OPERATIONAL AMPLIFIER
- TOP VIEW -



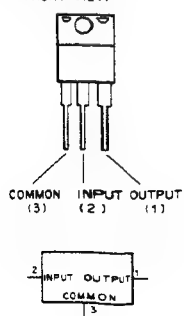
NJM7805FA
NJM7809FA
NJM7812FA
POSITIVE VOLTAGE REGULATOR (1A)
- SIDE VIEW -



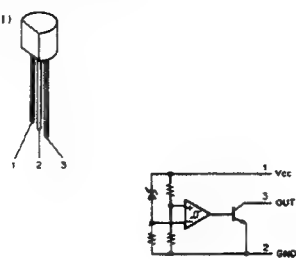
NJM78M05FA (JRC) +5V
NJM78M12FA (JRC) +12V
POSITIVE VOLTAGE REGULATOR
- FRONT VIEW -



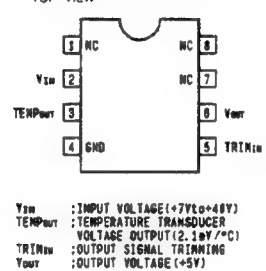
NJM79M05FA (JRC) -5V
NJM79M12FA (JRC) -12V
NEGATIVE VOLTAGE REGULATOR
- FRONT VIEW -



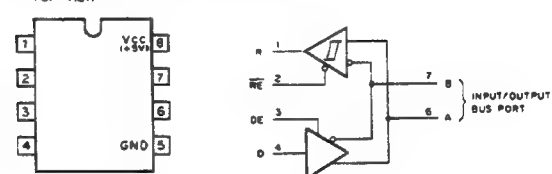
PST529C (MITSUMI) $V_s = 4.5V$
VOLTAGE DETECTOR, SYSTEM RESET
(MITSUMI)



REF-02EZ (PMI)
REFERENCE/TEMPERATURE TRANSDUCER
- TOP VIEW -



SN75176BP (TI)
TTL-DIFFERENTIAL BUS TRANSCEIVER
- TOP VIEW -



FUNCTION TABLE
- DRIVER -

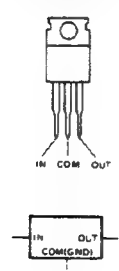
INPUT	ENABLE	OUTPUT	
D	DE	A	B
1	1	1	0
0	1	0	1
X	0	HI-Z	HI-Z

1 : HIGH LEVEL
0 : LOW LEVEL
X : DON'T CARE
HI-Z : HIGH IMPEDANCE
? : INDETERMINATE

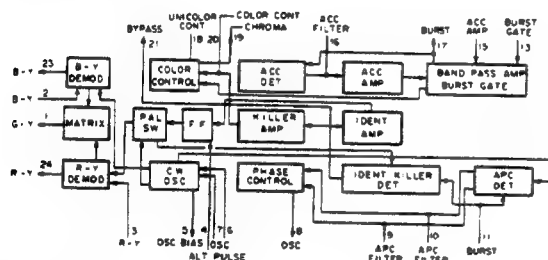
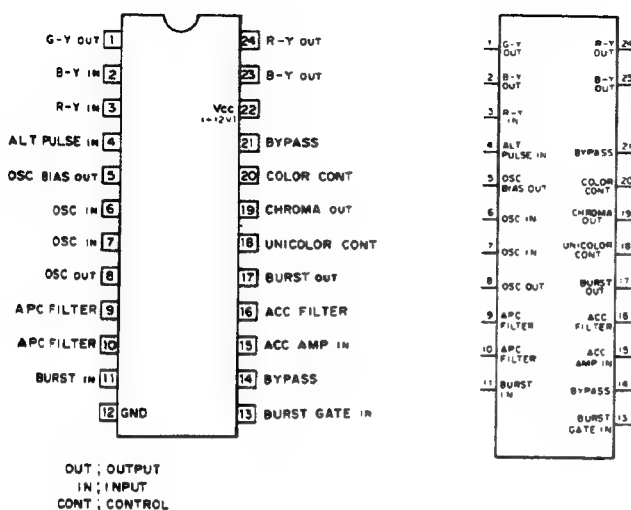
- RECEIVER -

DIFFERENTIAL INPUTS	ENABLE	OUTPUT
A-B	RE	R
$V_D > 0.2V$	0	1
$-0.2V < V_D < 0.2V$	0	?
$V_D < -0.2V$	0	0
X	1	HI-Z

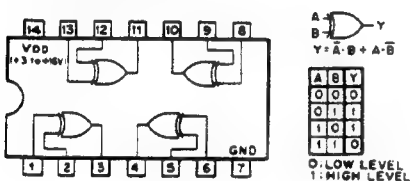
TA7812S
POSITIVE VOLTAGE REGULATOR (0.5A)
- SIDE VIEW -



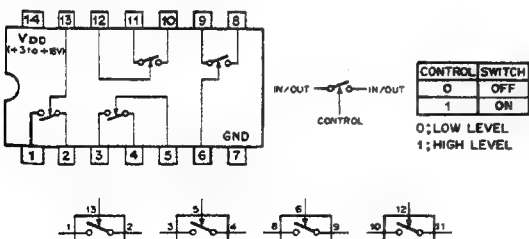
TA7193P (TOSHIBA)
TV CHROMA PROCESS (PAL)
— TOP VIEW —



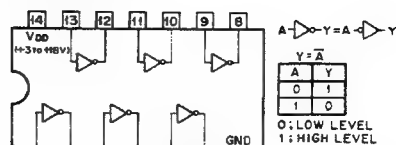
TC40308P (TOSHIBA)
TC40308PHB (TOSHIBA)
C-MOS EXCLUSIVE OR GATE
— TOP VIEW —



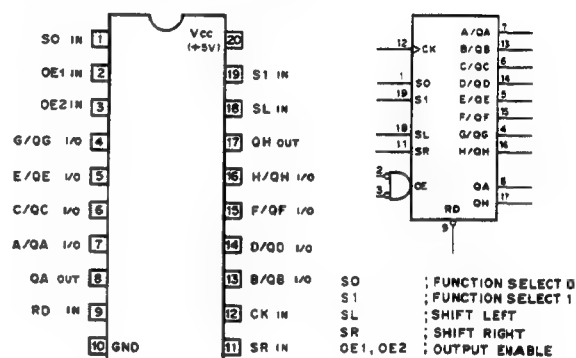
TC4068PHB (TOSHIBA)
C-MOS QUAD BILATERAL ANALOG SWITCHES
- TOP VIEW -



TC4069UBP (TOSHIBA)
C-MOS INVERTER
- TOP VIEW -



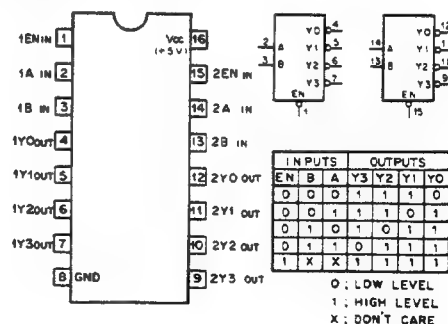
TC74HC299AF
TTL 8-BIT UNIVERSAL SHIFT/STORAGE REGISTER
- TOP VIEW -



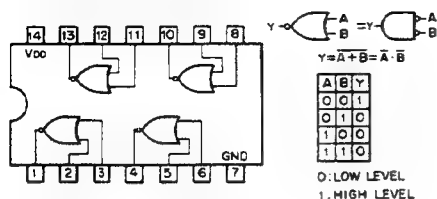
MODE	INPUTS								INPUTS/OUTPUTS								OUTPUT	
	FUNCTION ENABLE SHIFT																	
	RD	CK	S0	S1	OE1	OZ2	SL	SR	A	B	C	D	E	F	G	H	QA	QB
CLEAR	0	X	0	X	0	0	X	X	0	0	0	0	0	0	0	0	0	0
	0	X	X	0	0	0	X	X	0	0	0	0	0	0	0	0	0	0
HOLD	1	X	0	0	0	0	X	X	QA	QB	QC	QD	QE	QF	QH	QA	QB	
	1	0	X	X	0	0	X	X	QA	QB	QC	QD	QE	QF	QH	QA	QB	
SHIFT RIGHT	1	↓	1	0	0	0	X	1	QA	QB	QC	QD	QE	QF	QH	QA	QB	
	1	↓	1	0	0	0	X	0	QA	QB	QC	QD	QE	QF	QH	QA	QB	
SHIFT LEFT	1	↓	0	1	0	0	1	X	QA	QB	QC	QD	QE	QF	QH	QA	QB	
	1	↓	0	1	0	0	1	X	QA	QB	QC	QD	QE	QF	QH	QA	QB	
LOAD	1	↓	1	1	X	X	X	X	a	b	c	d	e	f	g	h	a	b
OUTPUT ENABLE	X	X	X	X	1	X	X	X	HIGH - IMPEDANCE (INTERNAL LOGIC IS NOT AFFECTED)								QA	QB
	X	X	X	X	1	X	X	X									QA	QB

```
a---h: The level of the steady-state input at inputs A through H respectively
0 : LOW LEVEL
1 : HIGH LEVEL
X : DON'T CARE
```

TC74HCT138AF
TTL 2-TO-4-LINE DECODER/DEMULTIPLEXER
— TOP VIEW —



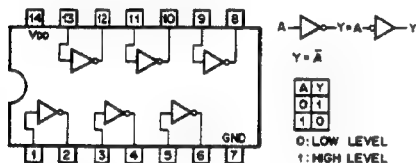
TC74HCT02AF (TOSHIBA) FLAT PACKAGE
C-MOS QUAD 2-INPUT NOR GATES
- TOP VIEW -



NOTE:

TYPE	V _{DD}
TC74AC02F	+2 to +5.5V
74ACT02SJ	+4.5 to +5.5V
TC74ACT02F	+2 to +6V
OTHER TYPES	+2 to +6V

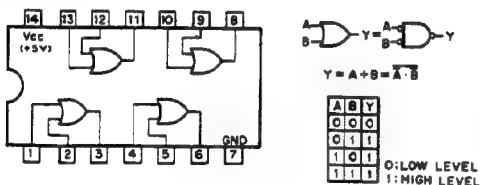
TC74HCT04AF (TOSHIBA) FLAT PACKAGE



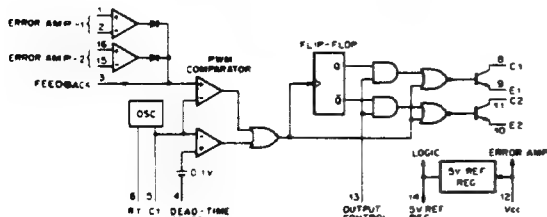
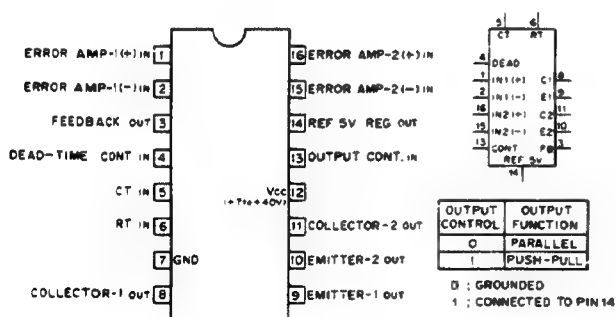
NOTE:

TYPE	V _{DD}
74HCT04 TYPE	+5V
TC74AC04 TYPE	+2 to +5.5V
74ACT04 TYPE	+4.5 to +5.5V
OTHER TYPES	+2 to +6V

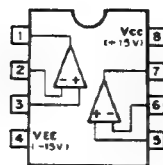
TC74HCT32AF
TTL 2-INPUT POSITIVE-OR GATE
- TOP VIEW -



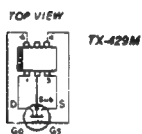
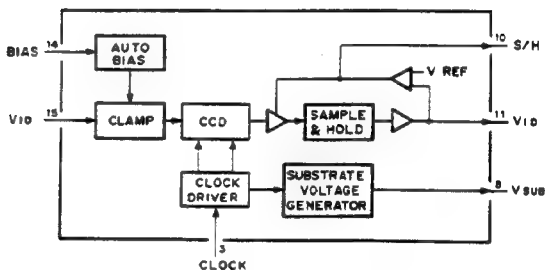
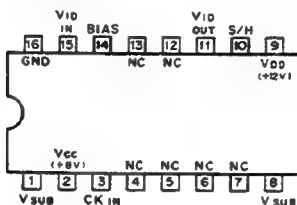
TL494CN (TI)
PWM POWER CONTROL
- TOP VIEW -



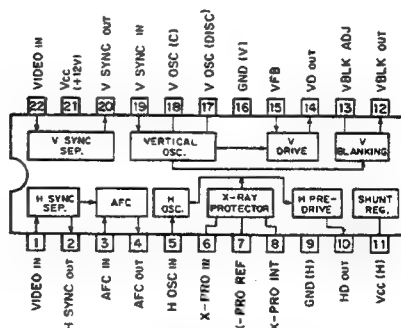
TL082ACP
TL082CP
TL082M
OPERATIONAL AMPLIFIER
(J FET-INPUT)
- TOP VIEW -



TL8608AP (TOSHIBA)
N-CH CCD ANALOG PROCESSING UNIT
- TOP VIEW -

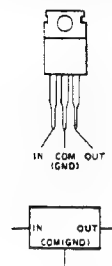


UPC1377C (NEC)
SYNCHRONIZATION SIGNAL PROCESSOR OF COLOR TV
- TOP VIEW -

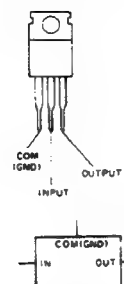


- AFC IN : INPUT OF AFC DETECTOR
- AFC OUT : OUTPUT OF AFC DETECTOR
- GND(H) : GROUND OF HORIZONTAL PART
- GND(V) : GROUND OF VERTICAL PART
- HD OUT : OUTPUT OF HORIZONTAL PULSE
- HOSC IN : INPUT OF HORIZONTAL OSCILLATION
- HSYNC OUT : OUTPUT OF SYNCHRONIZATION SIGNAL SEPARATOR
- VBLK OUT : OUTPUT OF VERTICAL BLANKING PULSE
- VBLKADJ : VERTICAL BLANKING PULSE DURATION ADJUST
- VCC : VCC OF VERTICAL PART
- VCC(H) : VCC OF HORIZONTAL PART
- VD OUT : OUTPUT OF VERTICAL AMPLIFIER
- VFB : VERTICAL FEEDBACK
- VIDEO IN : INPUT OF HORIZONTAL/VERTICAL SYNCHRONIZATION SIGNAL SEPARATOR
- VOSC(C) : VERTICAL OSCILLATION (CHARGE)
- VOSC(DISC) : VERTICAL OSCILLATION (DISCHARGE)
- VSYNC IN : INPUT OF VERTICAL SYNCHRONIZATION SIGNAL
- VSYNC OUT : OUTPUT OF VERTICAL SYNCHRONIZATION SIGNAL SEPARATOR
- X-PRO IN : INPUT OF X-RAY PROTECTOR
- X-PRO INT : INTEGRATION CIRCUIT OF X-RAY PROTECTOR
- X-PRO REF : REFERENCE OF X-RAY PROTECTOR

UPC7812H (NEC) +12V
POSITIVE VOLTAGE REGULATOR (1A)
- SIDE VIEW -

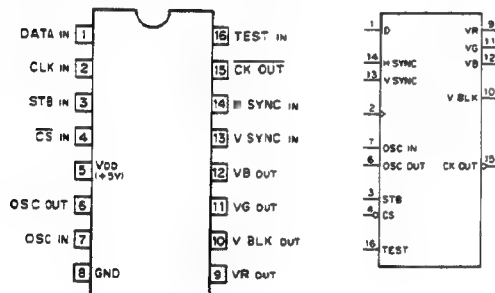


uPC7912H (NEC)
NEGATIVE VOLTAGE REGULATOR (1A)
- SIDE VIEW -



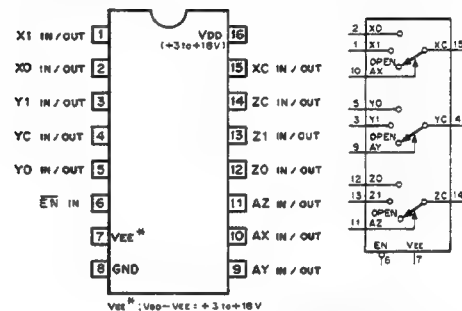
OUTPUT VOLTAGE	AN79??	FS79??	UA79??UC	uPC79??H	MC79??CT
-2V	-----	-----	-----	-----	MC7902CT
-5V	AN7905	FS7905	UA7905UC	uPC7905H	MC7905CT
-5.2V	-----	-----	-----	-----	MC7905.2CT
-6V	AN7906	-----	UA7906UC	-----	MC7906CT
-7V	AN7907	-----	-----	-----	-----
-8V	AN7908	-----	UA7908UC	uPC7908H	MC7908CT
-9V	AN7909	-----	-----	-----	-----
-10V	AN7910	-----	-----	-----	-----
-12V	AN7912	-----	UA7912UC	uPC7912H	MC7912CT
-15V	AN7915	-----	UA7915UC	uPC7915H	MC7915CT
-18V	AN7918	-----	UA7918UC	uPC7918H	MC7918CT
-20V	AN7920	-----	-----	-----	-----
-24V	AN7924	-----	UA7924UC	uPC7924H	MC7924CT

UPD6142G-101 (NEC) FLAT PACKAGE
C-MOS 8-BIT SERIAL INPUT CHARACTER DISPLAY
- TOP VIEW -



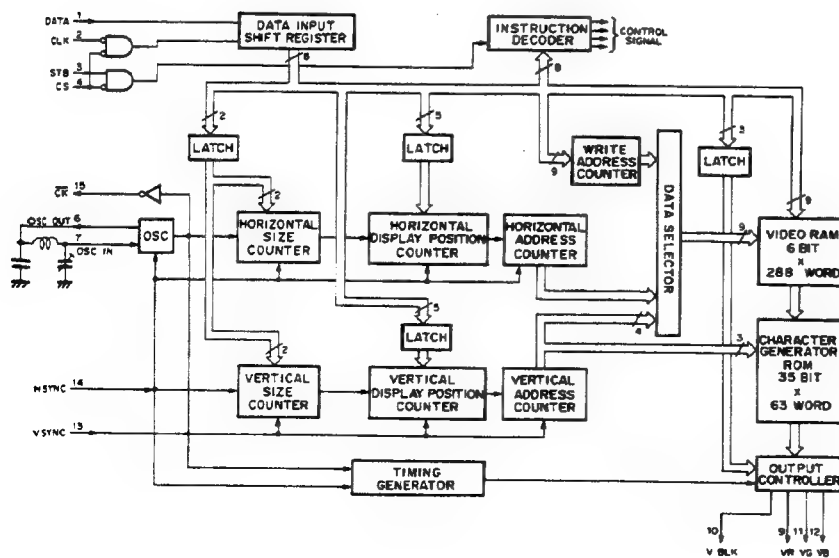
D: DATA INPUT
CK OUT: EQUAL TO OUTPUT OF OSC OUT
CLK: CLOCK INPUT
CS: CHIP SELECT INPUT
H SYNC: H SYNC INPUT
OSC IN, OUT: EXTERNAL TERMINAL FOR OSC
STB: STROBE INPUT
TEST: TEST CLOCK INPUT
VR: BLUE CHARACTER DATA OUTPUT
V BLK: V BLANKING OUTPUT
VG: GREEN CHARACTER DATA OUTPUT
VR: RED CHARACTER DATA OUTPUT
V SYNC: V SYNC INPUT

uPD4053BC (NEC)
C-MOS TRIPLE 2-CHANNEL ANALOG MULTIPLEXERS/DEMULTIPLEXERS
- TOP VIEW -

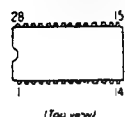


O: LOW LEVEL
1: HIGH LEVEL
X: DON'T CARE.

CONT. INPUTS	ON
EN A (X,Y,Z)	CHANNEL
0	0
0	1
1	X



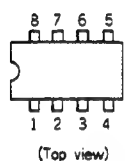
CXA1268P



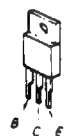
uPC574J



X25040



2SA473
2SB858
2SB860
2SB861
2SC3675
2SD1134



2SA812
2SA1162
2SA1226
2SC1623
2SC2757
2SC3624A
DTA144EK
DTC144EK



2SA844
2SA893A
2SA1091
2SC1890A
2SC2551
2SC2878
2SC3068



2SA979
2SA1306



2SA1048
2SA1115
2SC2688
2SC403SP
DTA124ES
DTA144ES
DTC143TS
DTC144ES
XDA124ES
XDA144ES
XDC144ES



2SA1142



2SA1175
2SC2785



2SC3298
2SD669A



2SB734
2SD774



2SD789



2SD1137



2SK381



2SK523



1S2835
1S2836
1S2837
MA152WK



1SS119
1SS83
WG713A



10E2
GP08D
RD10EB
RD12EB
RD12ES
RD20ES
RD3.0EB
RD3.0ES
RD4.3EB
RD4.3ES
RD5.1ES
RD5.6EB
RD5.6ES
RD6.2ES
RD7.5ES
RD8.2ES
RD9.1EB
RD9.1ES
RU-3AM



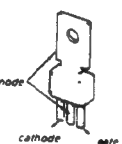
1T25



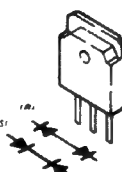
CR02AM-4
CR02AM-8



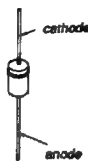
CR3CM-8



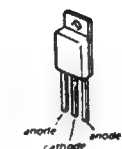
CTU-38R
CTU-38S



ERB44-06
ERB81-004
ERD28-04S
ERD28-08S
RH-1A
SIB01-02



ESAC25-04C



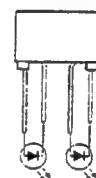
ESAC25-04N



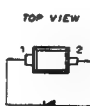
ESAC31-02D



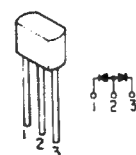
LT-9220H



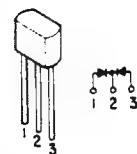
MA110



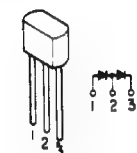
MC911



MC921



MC932



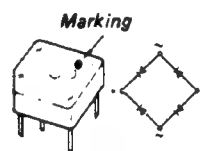
RB406N



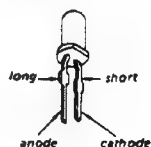
RD5.6M
RD7.5M



S3WB60Z



GL3HYB
TLG124A
TLR124
TLY124



V11N



SECTION 6 EXPLODED VIEWS

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

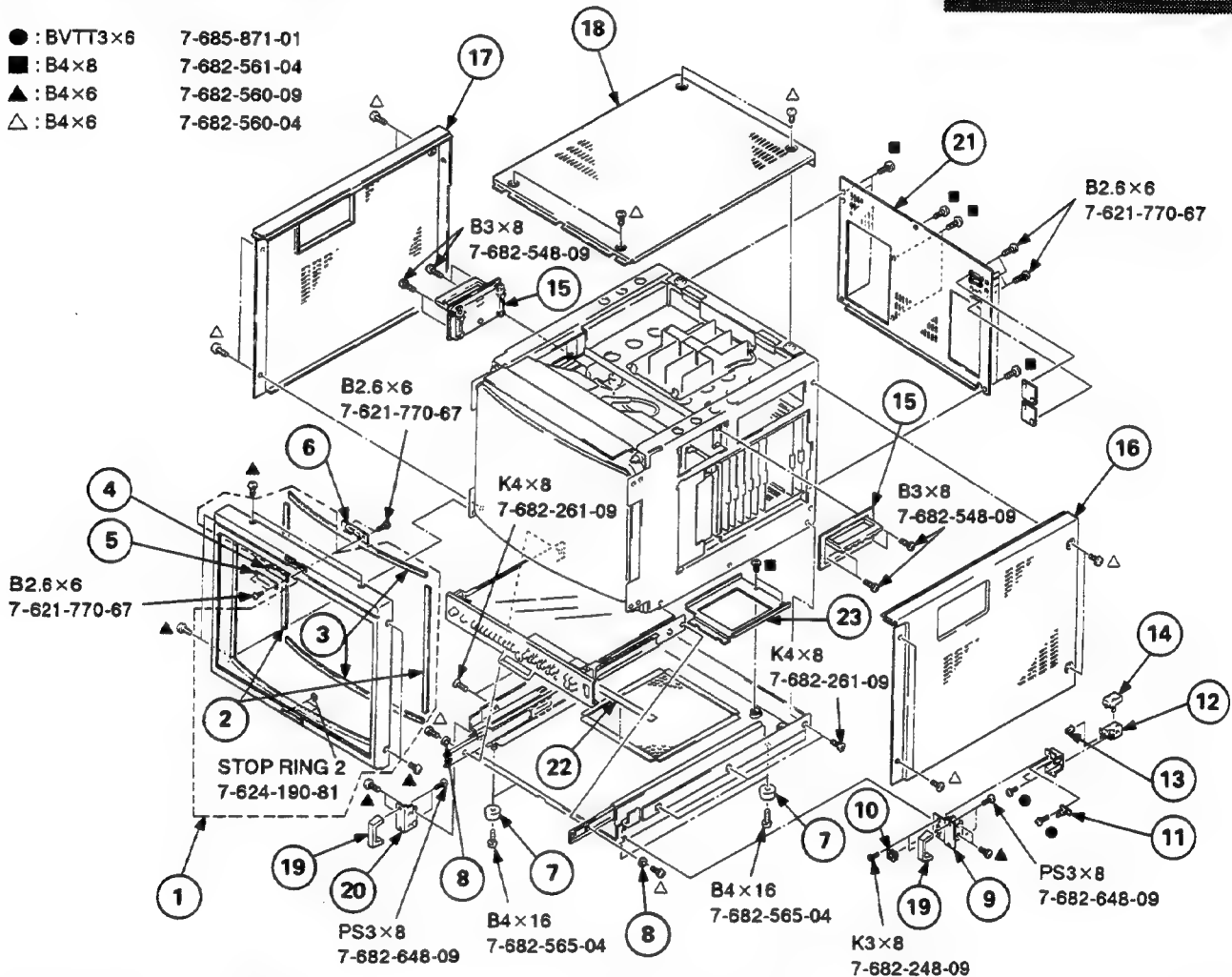
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark \triangle are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque \triangle sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

6-1. BEZEL AND COVERS

- : BVTT3×6 7-685-871-01
- : B4×8 7-682-561-04
- ▲ : B4×6 7-682-560-09
- △ : B4×6 7-682-560-04

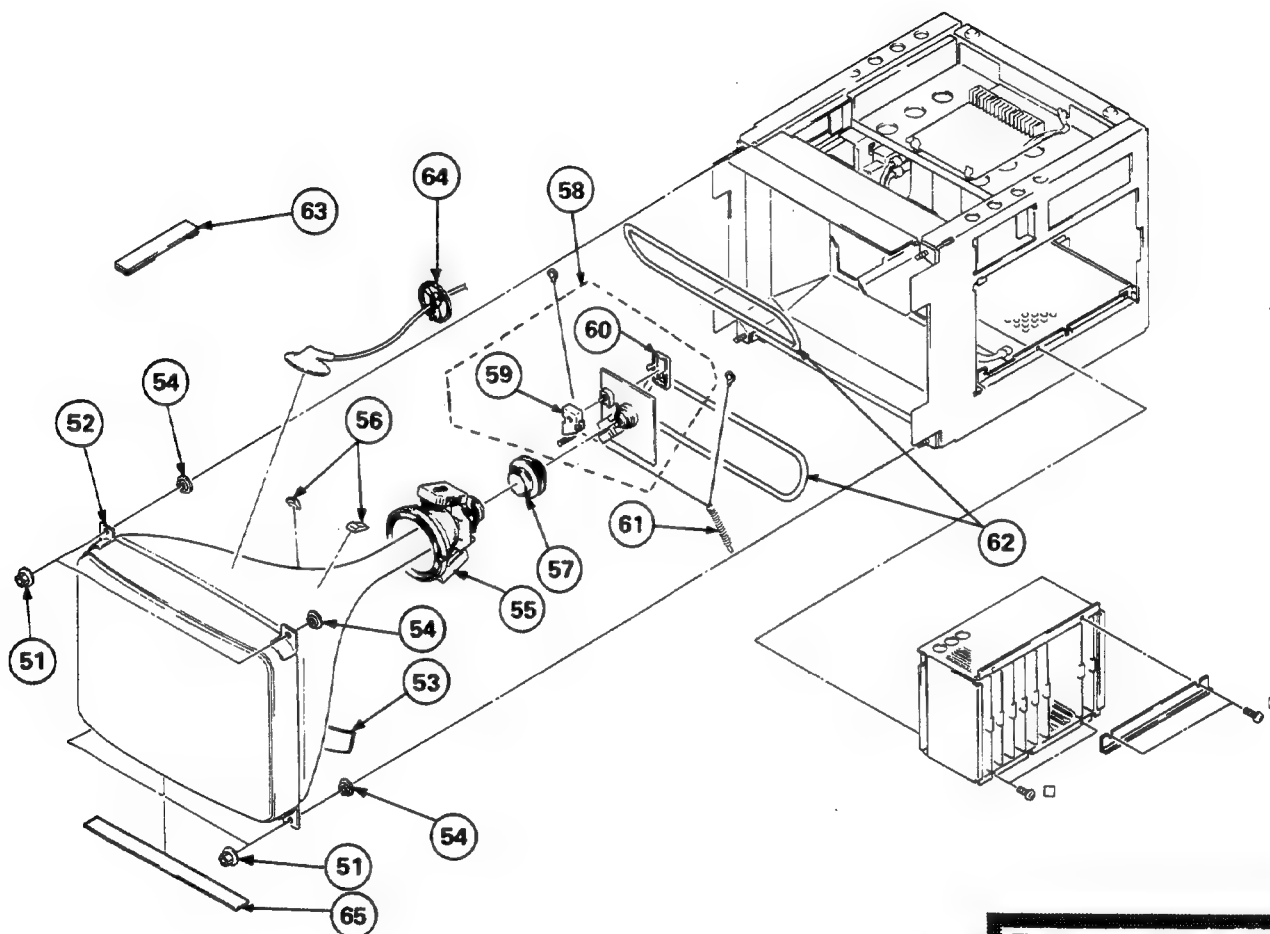


REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
1	X-4379-412-1	BEZEL ASSY	2,3	11	*1-631-679-11	Y BOARD	
2	4-308-878-XX	CUSHION (B), BEZEL		12	△.1-571-877-12	SWITCH, PUSH (AC POWER)	
3	4-308-878-XX	CUSHION (A), CRT		13	4-374-839-01	BUTTON (A)	
4	*4-386-839-01	PLATE, TALLY		14	*4-393-095-01	COVER, POWER SWITCH	
5	*4-386-840-01	PLATE (B), TALLY		15	X-3642-018-0	HANDLE ASSY	
6	*1-631-680-11	XB BOARD		16	*4-386-832-01	COVER (RIGHT)	
7	X-483-620-29	FOOT		17	*4-386-833-01	COVER (LEFT)	
8	*4-379-499-01	SPACER		18	*4-386-831-01	COVER (UPPER)	
9	*X-4379-408-1	PANEL ASSY, POWER SWITCH		19	*4-353-706-00	HANDLE	
10	4-379-423-11	ESCUTCHEON (A)		20	*4-386-808-01	BRACKET (LEFT), HANDLE	
				21	*4-391-239-01	COVER, REAR	
				22	4-372-556-01	SHEET, BLOTTER	
				23	4-386-814-03	BRACKET, POWER	

6-2. PICTURE TUBE

□: B3×10

7-682-548-04



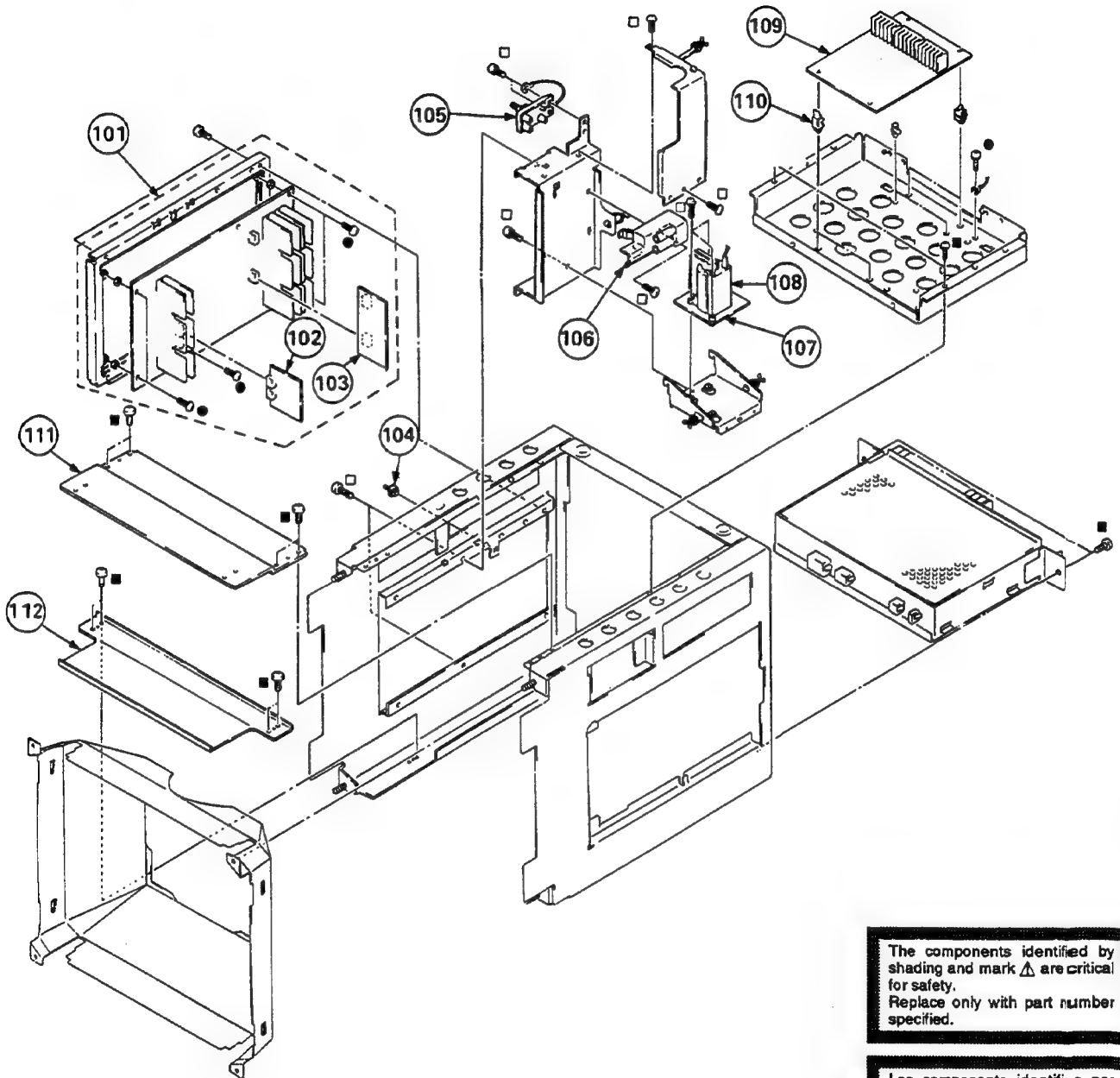
The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
51	4-306-034-00	FLANGE NUT, (B) 5MM		60	*4-379-160-01	COVER (REAR LID), CV	
52	Δ 8-736-121-05	CRT (N49KGH21X) (BVM-2016P ONLY)		61	4-303-774-XX	SPRING	
	Δ 8-736-123-05	CRT (N49KGH20X) (BVM-1916 ONLY)		62	Δ 1-426-460-11	COIL, DEMAGNETIZATION	
53	3-831-441-11	CLOTH, BLOTING		63	X-4309-608-0	PERMALLOY ASSY, CONVERGENCE	
54	4-348-567-00	WASHER, CRT POSITION		64	*3-704-372-01	HOLDER, HV CABLE	
55	Δ 1-451-349-21	DEFLECTION YOKE (Y20FZA)		65	4-385-725-01	SHEET, BLOTING	
56	3-703-003-00	SPACER, DY					
57	Δ 1-452-337-22	NECK ASSY, CRT (NA304)					
58	*A-1331-020-A	C BOARD, COMPLETE	59, 60				
59	*4-379-167-01	COVER (MAIN), CV					

6-3. CHASSIS

- : BVT3×6 7-685-871-01
- : B4×8 7-682-561-04
- : B3×10 7-682-549-04



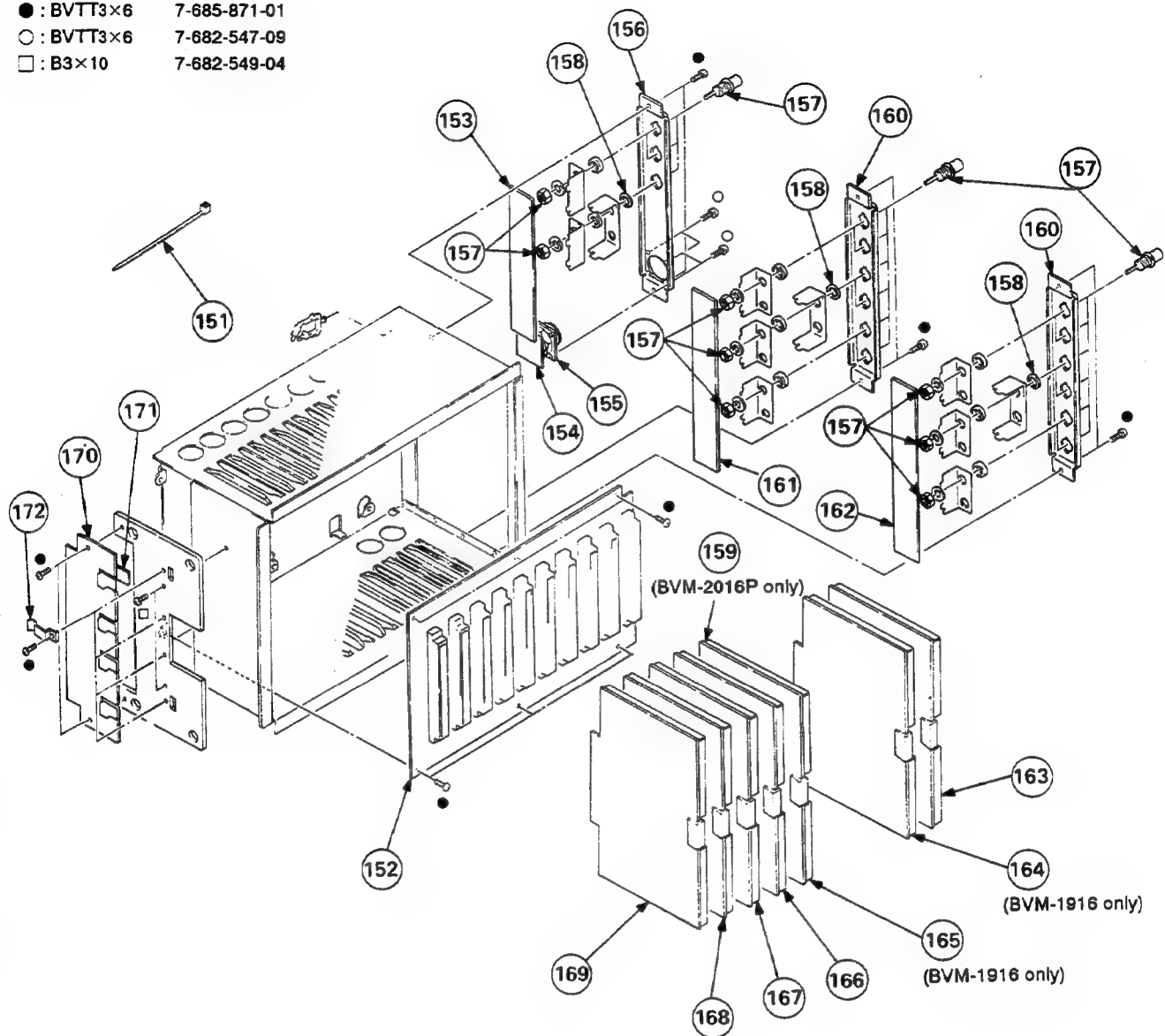
The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
101	*A-1345-881-A	EA BOARD, COMPLETE		102,103	106 Δ .1-238-301-12	RESISTOR ASSY, HIGH-VOLTAGE	
102	*1-631-686-11	EC BOARD		107	*1-631-678-11	P BOARD	
103	*1-631-685-11	EB BOARD		108	Δ .1-439-382-21	TRANSFORMER ASSY, FLYBACK	
104	*4-303-473-00	SUPPORT, PC		109	*A-1135-523-A	BK BOARD, COMPLETE	
105	Δ .1-237-165-13	RESISTOR ASSY, HIGH-VOLTAGE		110	*3-703-141-00	HOLDER, PCB	
				111	*4-386-819-02	STAY, FRONT	
				112	*4-391-234-03	STAY, UNDER	

6-4. SIGNAL BLOCK

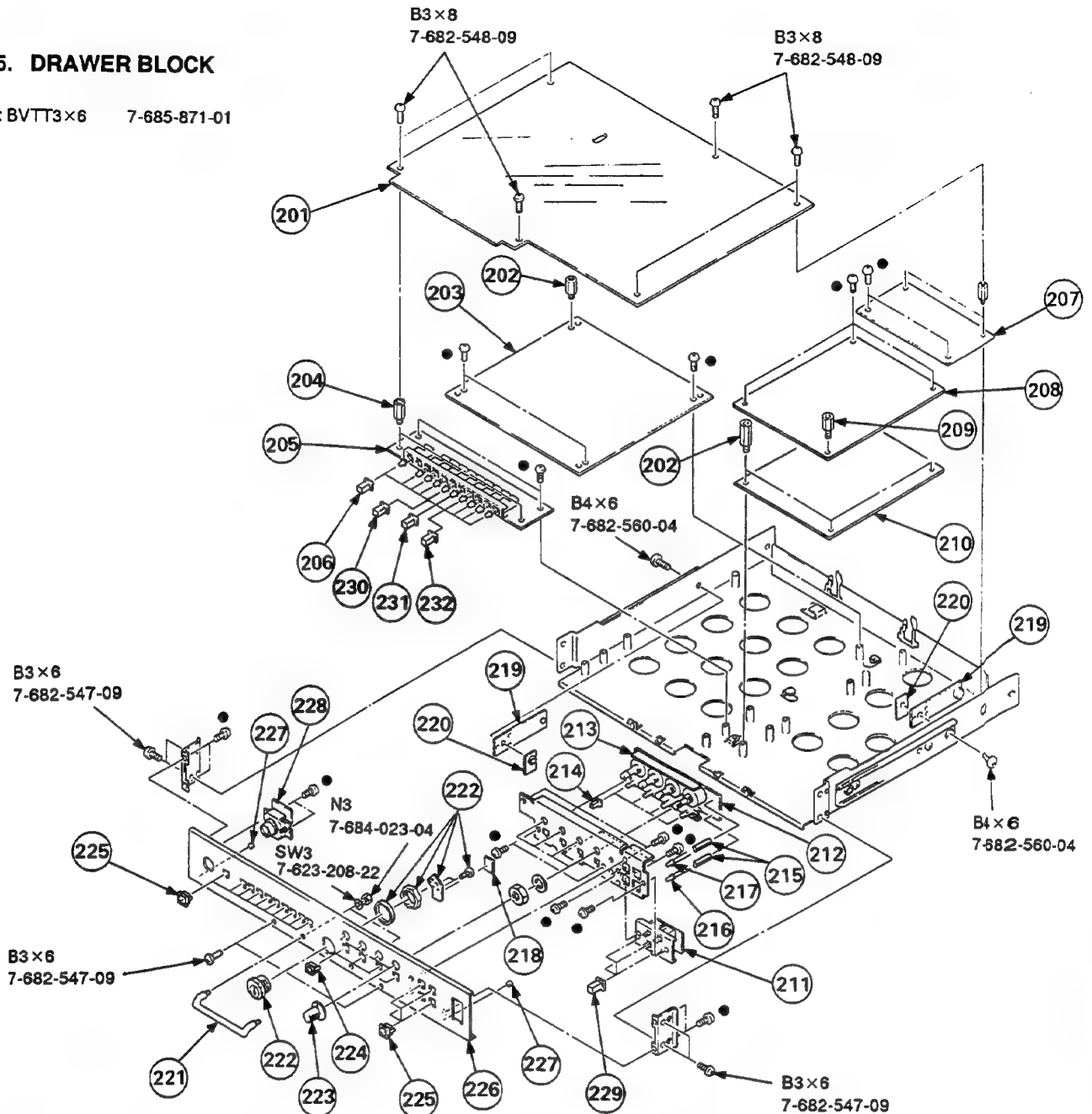
- : BVTT3×6 7-685-871-01
 ○ : BVTT3×6 7-682-547-09
 □ : B3×10 7-682-549-04



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
151	*3-337-402-01	BAND, BINDING		161	*1-618-786-11	QB BOARD	
152	*A-1390-344-A	TB BOARD, COMPLETE		162	*1-617-895-11	QA BOARD	
153	*1-627-678-11	W BOARD		163	*A-1135-355-A	BA BOARD, COMPLETE	
154	*1-627-677-11	V BOARD		164	*A-1135-606-B	BT BOARD, COMPLETE (BVM-1916 ONLY)	
155	1-563-265-11	CONNECTOR, MULTIPLE 10P		165	*A-1135-357-A	BC BOARD, COMPLETE (BVM-1916 ONLY)	
156	*4-391-220-01	PANEL (C), CONNECTOR		166	*A-1135-537-A	BG BOARD, COMPLETE	
157	1-565-791-11	CONNECTOR, BNC 1P		167	*A-1135-359-A	BH BOARD, COMPLETE	
158	*4-379-404-01	INSULATOR, BNC		168	*A-1135-591-A	BI BOARD, COMPLETE	
159	*A-1135-391-A	BD BOARD, COMPLETE (BVM-2016P ONLY)		169	*A-1135-361-A	BJ BOARD, COMPLETE	
160	*4-379-439-01	PANEL (A), CONNECTOR		170	*1-617-885-11	GC BOARD	
				171	4-370-970-01	SPACER, TR	
				172	*4-363-404-00	HOLDER, IC	

6-5. DRAWER BLOCK

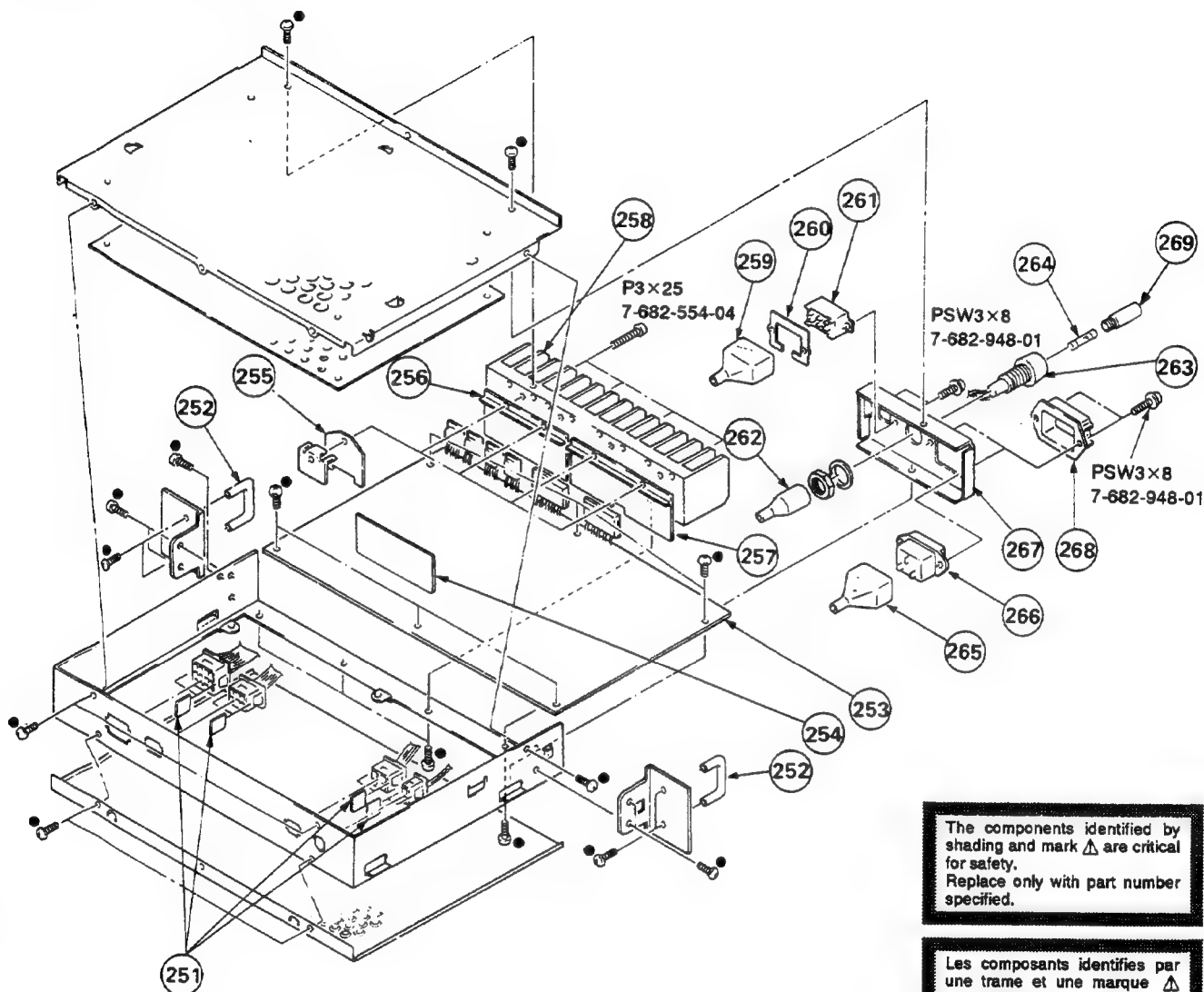
● : BVTT3×6 7-685-871-01



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
201	*4-040-631-01	COVER, PCB		216	8-719-938-68	DIODE GL3HY8	
202	*2-264-136-00	SUPPORT, SWITCH, PUSH BUTTON		217	8-719-812-41	DIODE TLR124	
203	*A-1345-882-B	DA BOARD, COMPLETE		218	4-337-209-11	PROTECTOR, SCRATCH	
204	3-897-313-01	BOSS (17.2), RELAY		219	*X-4379-407-1	STOPPER ASSY	
205	*1-631-683-11	HA BOARD		220	*4-386-844-01	NUT, PLATE	
206	4-374-839-21	BUTTON (A)		221	4-386-802-01	HANDLE, DRAWER	
207	*A-1345-884-A	DB BOARD, COMPLETE		222	4-378-917-01	LOCK, CYLINDER	
208	A-1371-895-A	HY BOARD, COMPLETE		223	X-3673-635-0	KNOB (1) ASSY, CONTROL	
209	*3-711-018-01	STAND OFF-BRAKE BAND GUIDE		224	4-379-424-11	ESCUTCHEON (B)	
210	A-1371-896-A	HZ BOARD, COMPLETE		225	4-379-423-11	ESCUTCHEON (A)	
211	*1-647-258-11	HX BOARD		226	4-386-822-21	PANEL, CONTROL	
212	*1-647-257-11	HW BOARD		227	4-911-672-01	FELT, COVER	
213	*1-627-682-11	HH BOARD		228	1-941-422-15	CONNECTOR ASSY (ROUND TYPE)12	
214	4-379-422-11	BUTTON (B)		229	4-039-982-01	BUTTON (U)	
215	*4-026-910-00	HOLDER, LED		230	4-374-839-31	BUTTON (A) (R)	
				231	4-374-839-41	BUTTON (A) (G)	
				232	4-374-839-51	BUTTON (A) (B)	

6-6. POWER BLOCK

● : BVTT3×6 7-685-871-01



The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
251	3-675-469-00	SPACER, SOLENOID		260	*4-379-409-01	NUT, PLATE	
252	4-379-421-01	HANDLE, DRAWER		261	Δ 1-570-173-22	SWITCH, VOLTAGE CHANGE	
253	*A-1316-089-A	GA BOARD, COMPLETE (BVM-1916 ONLY)	254	262	*4-393-031-01	COVER, FUSE HOLDER	
	*A-1316-090-A	GA BOARD, COMPLETE (BVM-2016P ONLY)	254	263	1-533-167-21	HOLDER, FUSE	
254	*1-627-679-11	GB BOARD		264	Δ 1-532-746-11	FUSE, GLASS TUBE (4.0A/125V)	
255	*4-379-408-01	INSULATOR (G3)		265	*4-601-466-11	COVER, 3P INLET	
256	4-379-410-01	SPACER (G2), POLISHING		266	Δ 1-580-375-11	INLET 3P	
257	4-379-403-01	SPACER (G1), POLISHING		267	*4-379-430-01	PANEL, POWER	
258	*4-347-706-02	HEAT SINK (TR)		268	2-990-241-02	HOLDER (A), PLUG	
259	*4-371-879-02	COVER, AC SELECT		269	1-533-168-21	HOLDER, FUSE	

SECTION 7 ELECTRICAL PARTS LIST

BA

NOTE:

The components identified by shading and mark **Δ** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **Δ** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

• Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
• All resistors are in ohms
• F: nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS
• MF: μ F, PF: μ F
• The components identified by **Δ** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

COILS
• MMH: mH, UH: μ H

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
	*A-1135-355-A	BA BOARD, COMPLETE *****		C34	1-126-966-11	ELECT 10MF 20% 16V	
	*4-353-708-00	HOOK, FINGER		C35	1-126-966-11	ELECT 10MF 20% 16V	
	7-685-871-01	SCREW +BVT 3X6 (S)		C36	1-126-966-11	ELECT 10MF 20% 16V	
	8-729-119-78	TRANSISTOR 2SC2785-HFE		C37	1-126-966-11	ELECT 10MF 20% 16V	
				C38	1-126-966-11	ELECT 10MF 20% 16V	
				C39	1-101-004-00	CERAMIC 0.01MF 50V	
		<CONNECTOR>		C51	1-126-103-11	ELECT 470MF 20% 16V	
BA1	*1-566-054-11	PIN, CONNECTOR 2P		C52	1-126-101-11	ELECT 100MF 20% 16V	
BA2	*1-566-054-11	PIN, CONNECTOR 2P		C53	1-126-101-11	ELECT 100MF 20% 16V	
BA3	*1-566-054-11	PIN, CONNECTOR 2P		C54	1-126-101-11	ELECT 100MF 20% 16V	
BA4	*1-566-054-11	PIN, CONNECTOR 2P		C55	1-126-101-11	ELECT 100MF 20% 16V	
BA5	*1-566-054-11	PIN, CONNECTOR 2P					
BA6	*1-566-054-11	PIN, CONNECTOR 2P		C56	1-126-101-11	ELECT 100MF 20% 16V	
		<COMPOSITION CIRCUIT BLOCK>		C57	1-126-101-11	ELECT 100MF 20% 16V	
C1	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C71	1-101-004-00	CERAMIC 0.01MF 50V	
C2	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C72	1-101-004-00	CERAMIC 0.01MF 50V	
C3	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C73	1-101-004-00	CERAMIC 0.01MF 50V	
C4	1-233-030-11	COMPOSITION CIRCUIT BLOCK					
C5	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C74	1-101-004-00	CERAMIC 0.01MF 50V	
				C75	1-101-004-00	CERAMIC 0.01MF 50V	
C6	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C76	1-101-004-00	CERAMIC 0.01MF 50V	
C7	1-233-030-11	COMPOSITION CIRCUIT BLOCK		C77	1-101-004-00	CERAMIC 0.01MF 50V	
		<CAPACITOR>		C101	1-102-038-00	CERAMIC 0.001MF 500V	
C1	1-124-910-11	ELECT 47MF 20% 16V		C102	1-126-966-11	ELECT 10MF 20% 16V	
C2	1-124-910-11	ELECT 47MF 20% 16V		C103	1-102-951-00	CERAMIC 15PF 5% 50V	
C3	1-124-910-11	ELECT 47MF 20% 16V		C104	1-124-902-00	ELECT 0.47MF 20% 50V	
C4	1-126-966-11	ELECT 10MF 20% 16V		C201	1-102-038-00	CERAMIC 0.001MF 500V	
C5	1-124-910-11	ELECT 47MF 20% 16V		C202	1-126-966-11	ELECT 10MF 20% 16V	
C6	1-124-910-11	ELECT 47MF 20% 16V		C203	1-102-951-00	CERAMIC 15PF 5% 50V	
C7	1-124-910-11	ELECT 47MF 20% 16V		C204	1-124-902-00	ELECT 0.47MF 20% 50V	
C8	1-124-910-11	ELECT 47MF 20% 16V		C301	1-102-038-00	CERAMIC 0.001MF 500V	
C9	1-101-004-00	CERAMIC 0.01MF 50V		C302	1-126-966-11	ELECT 10MF 20% 16V	
C10	1-101-004-00	CERAMIC 0.01MF 50V		C303	1-102-965-00	CERAMIC 39PF 5% 50V	
C11	1-126-103-11	ELECT 470MF 20% 16V		C304	1-124-902-00	ELECT 0.47MF 20% 50V	
C12	1-126-101-11	ELECT 100MF 20% 16V		C305	1-102-947-00	CERAMIC 10PF 0.5PF 50V	
C13	1-126-101-11	ELECT 100MF 20% 16V		C306	1-102-942-00	CERAMIC 5PF 1PF 50V	
C14	1-126-101-11	ELECT 100MF 20% 16V		C401	1-102-038-00	CERAMIC 0.001MF 500V	
C15	1-126-101-11	ELECT 100MF 20% 16V		C402	1-126-966-11	ELECT 10MF 20% 16V	
C16	1-126-101-11	ELECT 100MF 20% 16V		C403	1-102-951-00	CERAMIC 15PF 5% 50V	
C17	1-126-101-11	ELECT 100MF 20% 16V		C404	1-124-902-00	ELECT 0.47MF 20% 50V	
C18	1-126-966-11	ELECT 10MF 20% 16V		C501	1-102-038-00	CERAMIC 0.001MF 500V	
C19	1-126-966-11	ELECT 10MF 20% 16V		C502	1-126-966-11	ELECT 10MF 20% 16V	
C20	1-101-004-00	CERAMIC 0.01MF 50V		C503	1-102-951-00	CERAMIC 15PF 5% 50V	
C21	1-101-006-00	CERAMIC 0.047MF 50V		C504	1-124-902-00	ELECT 0.47MF 20% 50V	
C31	1-101-004-00	CERAMIC 0.01MF 50V		C601	1-102-038-00	CERAMIC 0.001MF 500V	
C32	1-126-966-11	ELECT 10MF 20% 16V		C602	1-126-966-11	ELECT 10MF 20% 16V	
C33	1-126-966-11	ELECT 10MF 20% 16V		C603	1-102-951-00	CERAMIC 15PF 5% 50V	
				C604	1-124-902-00	ELECT 0.47MF 20% 50V	
				C701	1-102-976-00	CERAMIC 180PF 5% 50V	
				C702	1-102-947-00	CERAMIC 10PF 0.5PF 50V	
				C703	1-126-966-11	ELECT 10MF 20% 16V	
				C704	1-124-910-11	ELECT 47MF 20% 16V	
				C705	1-136-153-00	FILM 0.01MF 5% 50V	

BA

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C706	1-124-903-11	ELECT	1MF	20%	50V		
C707	1-123-369-00	ELECT	4.7MF	20%	25V		
C708	1-126-966-11	ELECT	10MF	20%	16V		
C709	1-102-973-00	CERAMIC	100PF	5%	50V		
C710	1-130-481-00	MYLAR	0.0068MF	5%	50V		
C711	1-136-155-00	FILM	0.015MF	5%	50V		
C712	1-130-471-00	MYLAR	0.001MF	5%	50V		
C713	1-124-903-11	ELECT	1MF	20%	50V		
C714	1-102-973-00	CERAMIC	100PF	5%	50V		
C715	1-101-361-00	CERAMIC	150PF	5%	50V		
C716	1-136-153-00	FILM	0.01MF	5%	50V		
C717	1-102-973-00	CERAMIC	100PF	5%	50V		
<TRIMMER>							
CV101	1-141-179-12	CAP. VAR. TRIMMER					
CV102	1-141-260-00	TRIMAR, CERAMIC					
CV201	1-141-179-12	CAP. VAR. TRIMMER					
CV202	1-141-260-00	TRIMAR, CERAMIC					
CV401	1-141-179-12	CAP. VAR. TRIMMER					
CV402	1-141-260-00	TRIMAR, CERAMIC					
CV501	1-141-179-12	CAP. VAR. TRIMMER					
CV502	1-141-260-00	TRIMAR, CERAMIC					
CV601	1-141-179-12	CAP. VAR. TRIMMER					
CV602	1-141-260-00	TRIMAR, CERAMIC					
<DIODE>							
D1	8-719-109-63	DIODE RD3.0ESB2					
D2	8-719-000-06	DIODE MC921					
D4	8-719-000-04	DIODE MC911					
D701	8-719-911-19	DIODE 1SS119					
D702	8-719-109-75	DIODE RD4.3ESB2					
D703	8-719-911-19	DIODE 1SS119					
D704	8-719-911-19	DIODE 1SS119					
D705	8-719-911-19	DIODE 1SS119					
D706	8-719-911-19	DIODE 1SS119					
D707	8-719-911-19	DIODE 1SS119					
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D709	8-719-911-19	DIODE 1SS119					
D710	8-719-911-19	DIODE 1SS119					
<IC>							
IC1	8-759-208-94	IC CX-894					
IC2	8-759-208-94	IC CX-894					
IC3	8-759-140-53	IC UPD4053BC					
<TRANSISTOR>							
Q1	8-729-900-89	TRANSISTOR DTC144ES					
Q2	8-729-384-48	TRANSISTOR 2SA844-E					
Q3	8-729-900-89	TRANSISTOR DTC144ES					
Q4	8-729-900-89	TRANSISTOR DTC144ES					
Q5	8-729-900-89	TRANSISTOR DTC144ES					
Q6	8-729-900-65	TRANSISTOR DTA144ES					
Q101	8-729-266-82	TRANSISTOR 2SC2668-0					
Q102	8-729-266-82	TRANSISTOR 2SC2668-0					
Q103	8-729-266-82	TRANSISTOR 2SC2668-0					
Q104	8-729-384-48	TRANSISTOR 2SA844-E					
Q105	8-729-266-82	TRANSISTOR 2SC2668-0					
Q201	8-729-266-82	TRANSISTOR 2SC2668-0					
Q202	8-729-266-82	TRANSISTOR 2SC2668-0					
Q203	8-729-266-82	TRANSISTOR 2SC2668-0					
Q204	8-729-384-48	TRANSISTOR 2SA844-E					
Q205	8-729-266-82	TRANSISTOR 2SC2668-0					
Q301	8-729-266-82	TRANSISTOR 2SC2668-0					
Q302	8-729-266-82	TRANSISTOR 2SC2668-0					
Q303	8-729-266-82	TRANSISTOR 2SC2668-0					
Q304	8-729-384-48	TRANSISTOR 2SA844-E					
Q305	8-729-266-82	TRANSISTOR 2SC2668-0					
Q401	8-729-266-82	TRANSISTOR 2SC2668-0					
Q402	8-729-266-82	TRANSISTOR 2SC2668-0					
Q403	8-729-266-82	TRANSISTOR 2SC2668-0					
Q404	8-729-384-48	TRANSISTOR 2SA844-E					
Q405	8-729-266-82	TRANSISTOR 2SC2668-0					
Q501	8-729-266-82	TRANSISTOR 2SC2668-0					
Q502	8-729-266-82	TRANSISTOR 2SC2668-0					
Q503	8-729-266-82	TRANSISTOR 2SC2668-0					
Q504	8-729-384-48	TRANSISTOR 2SA844-E					
Q505	8-729-266-82	TRANSISTOR 2SC2668-0					
Q601	8-729-266-82	TRANSISTOR 2SC2668-0					
Q602	8-729-266-82	TRANSISTOR 2SC2668-0					
Q603	8-729-266-82	TRANSISTOR 2SC2668-0					
Q604	8-729-384-48	TRANSISTOR 2SA844-E					
Q605	8-729-266-82	TRANSISTOR 2SC2668-0					
Q701	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q702	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q703	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q704	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q705	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q706	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q707	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q708	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q709	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q710	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q711	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q712	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q713	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q714	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q715	8-729-800-10	TRANSISTOR 2SC3068					
Q716	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q717	8-729-119-76	TRANSISTOR 2SA1175-HFE					
<RESISTOR>							
R1	1-249-405-11	CARBON	100	5%	1/4W		
R2	1-249-405-11	CARBON	100	5%	1/4W		
R3	1-249-405-11	CARBON	100	5%	1/4W		
R4	1-249-437-11	CARBON	47K	5%	1/4W		
R5	1-249-405-11	CARBON	100	5%	1/4W		
R6	1-249-432-11	CARBON	18K	5%	1/4W		
R7	1-249-434-11	CARBON	27K	5%	1/4W		
R8	1-249-422-11	CARBON	2.7K	5%	1/4W		
R9	1-249-405-11	CARBON	100	5%	1/4W		
R10	1-249-405-11	CARBON	100	5%	1/4W		
R11	1-249-433-11	CARBON	22K	5%	1/4W		
R12	1-249-405-11	CARBON	100	5%	1/4W		
R13	1-249-437-11	CARBON	47K	5%	1/4W		
R14	1-249-429-11	CARBON	10K	5%	1/4W		
R101	1-249-417-11	CARBON	1K	5%	1/4W		
R102	1-249-418-11	CARBON	1.2K	5%	1/4W		
R103	1-249-425-11	CARBON	4.7K	5%	1/4W		
R104	1-249-405-11	CARBON	100	5%	1/4W		
R105	1-215-437-00	METAL	4.7K	1%	1/4W		
R106	1-249-430-11	CARBON	12K	5%	1/4W		
R107	1-249-433-11	CARBON	22K	5%	1/4W		
R108	1-215-427-00	METAL	1.8K	1%	1/4W		

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R109	1-215-415-00	METAL	560 1% 1/4W	R608	1-215-427-00	METAL	1.8K 1% 1/4W
R110	1-249-405-11	CARBON	100 5% 1/4W	R609	1-215-415-00	METAL	560 1% 1/4W
R111	1-215-431-00	METAL	2.7K 1% 1/4W	R610	1-249-405-11	CARBON	100 5% 1/4W
R112	1-249-421-11	CARBON	2.2K 5% 1/4W	R611	1-215-431-00	METAL	2.7K 1% 1/4W
R113	1-249-393-11	CARBON	10 5% 1/4W	R612	1-249-421-11	CARBON	2.2K 5% 1/4W
R201	1-249-417-11	CARBON	1K 5% 1/4W	R613	1-249-393-11	CARBON	10 5% 1/4W
R202	1-249-418-11	CARBON	1.2K 5% 1/4W	R701	1-249-433-11	CARBON	22K 5% 1/4W
R203	1-249-425-11	CARBON	4.7K 5% 1/4W	R702	1-249-438-11	CARBON	56K 5% 1/4W
R204	1-249-405-11	CARBON	100 5% 1/4W	R703	1-249-417-11	CARBON	1K 5% 1/4W
R205	1-215-437-00	METAL	4.7K 1% 1/4W	R704	1-249-417-11	CARBON	1K 5% 1/4W
R206	1-249-430-11	CARBON	12K 5% 1/4W	R705	1-249-424-11	CARBON	3.9K 5% 1/4W
R207	1-249-433-11	CARBON	22K 5% 1/4W	R706	1-249-417-11	CARBON	1K 5% 1/4W
R208	1-215-427-00	METAL	1.8K 1% 1/4W	R707	1-249-429-11	CARBON	10K 5% 1/4W
R209	1-215-415-00	METAL	560 1% 1/4W	R708	1-249-421-11	CARBON	2.2K 5% 1/4W
R210	1-249-405-11	CARBON	100 5% 1/4W	R709	1-249-419-11	CARBON	1.5K 5% 1/4W
R211	1-215-431-00	METAL	2.7K 1% 1/4W	R710	1-249-418-11	CARBON	1.2K 5% 1/4W
R212	1-249-421-11	CARBON	2.2K 5% 1/4W	R711	1-249-434-11	CARBON	27K 5% 1/4W
R213	1-249-393-11	CARBON	10 5% 1/4W	R712	1-249-433-11	CARBON	22K 5% 1/4W
R301	1-249-417-11	CARBON	1K 5% 1/4W	R713	1-249-422-11	CARBON	2.7K 5% 1/4W
R302	1-249-418-11	CARBON	1.2K 5% 1/4W	R714	1-249-427-11	CARBON	6.8K 5% 1/4W
R303	1-249-426-11	CARBON	5.6K 5% 1/4W	R715	1-249-433-11	CARBON	22K 5% 1/4W
R304	1-249-405-11	CARBON	100 5% 1/4W	R716	1-249-422-11	CARBON	2.7K 5% 1/4W
R305	1-249-426-11	CARBON	5.6K 5% 1/4W	R717	1-249-425-11	CARBON	4.7K 5% 1/4W
R306	1-249-430-11	CARBON	12K 5% 1/4W	R718	1-249-410-11	CARBON	270 5% 1/4W
R307	1-249-432-11	CARBON	18K 5% 1/4W	R719	1-249-414-11	CARBON	560 5% 1/4W
R308	1-249-421-11	CARBON	2.2K 5% 1/4W	R720	1-247-850-11	CARBON	6.2K 5% 1/4W
R309	1-249-417-11	CARBON	1K 5% 1/4W	R721	1-249-438-11	CARBON	56K 5% 1/4W
R310	1-249-405-11	CARBON	100 5% 1/4W	R722	1-249-441-11	CARBON	100K 5% 1/4W
R311	1-249-417-11	CARBON	1K 5% 1/4W	R723	1-249-437-11	CARBON	47K 5% 1/4W
R312	1-249-421-11	CARBON	2.2K 5% 1/4W	R724	1-249-429-11	CARBON	10K 5% 1/4W
R313	1-249-393-11	CARBON	10 5% 1/4W	R725	1-249-438-11	CARBON	56K 5% 1/4W
R401	1-249-417-11	CARBON	1K 5% 1/4W	R726	1-247-895-00	CARBON	470K 5% 1/4W
R402	1-249-418-11	CARBON	1.2K 5% 1/4W	R727	1-249-425-11	CARBON	4.7K 5% 1/4W
R403	1-249-425-11	CARBON	4.7K 5% 1/4W	R728	1-249-435-11	CARBON	33K 5% 1/4W
R404	1-249-405-11	CARBON	100 5% 1/4W	R729	1-249-423-11	CARBON	3.3K 5% 1/4W
R405	1-215-437-00	METAL	4.7K 1% 1/4W	R730	1-249-421-11	CARBON	2.2K 5% 1/4W
R406	1-249-430-11	CARBON	12K 5% 1/4W	R731	1-249-422-11	CARBON	2.7K 5% 1/4W
R407	1-249-433-11	CARBON	22K 5% 1/4W	R732	1-249-422-11	CARBON	2.7K 5% 1/4W
R408	1-215-427-00	METAL	1.8K 1% 1/4W	R733	1-249-421-11	CARBON	2.2K 5% 1/4W
R409	1-215-415-00	METAL	560 1% 1/4W	R734	1-249-421-11	CARBON	2.2K 5% 1/4W
R410	1-249-405-11	CARBON	100 5% 1/4W	R735	1-249-421-11	CARBON	2.2K 5% 1/4W
R411	1-215-431-00	METAL	2.7K 1% 1/4W	R736	1-249-425-11	CARBON	4.7K 5% 1/4W
R412	1-249-421-11	CARBON	2.2K 5% 1/4W	R737	1-249-405-11	CARBON	100 5% 1/4W
R413	1-249-393-11	CARBON	10 5% 1/4W	R738	1-249-441-11	CARBON	100K 5% 1/4W
R501	1-249-417-11	CARBON	1K 5% 1/4W	R739	1-249-433-11	CARBON	22K 5% 1/4W
R502	1-249-418-11	CARBON	1.2K 5% 1/4W	R740	1-249-417-11	CARBON	1K 5% 1/4W
R503	1-249-425-11	CARBON	4.7K 5% 1/4W	R741	1-202-473-00	SOLID	5.6M 5% 1/4W
R504	1-249-405-11	CARBON	100 5% 1/4W	R906	1-249-389-11	CARBON	4.7 5% 1/4W
R505	1-215-437-00	METAL	4.7K 1% 1/4W	R907	1-249-389-11	CARBON	4.7 5% 1/4W
R506	1-249-430-11	CARBON	12K 5% 1/4W				
R507	1-249-433-11	CARBON	22K 5% 1/4W				
R508	1-215-427-00	METAL	1.8K 1% 1/4W				
R509	1-215-415-00	METAL	560 1% 1/4W				
R510	1-249-405-11	CARBON	100 5% 1/4W				
R511	1-215-431-00	METAL	2.7K 1% 1/4W				
R512	1-249-421-11	CARBON	2.2K 5% 1/4W				
R513	1-249-393-11	CARBON	10 5% 1/4W				
R601	1-249-417-11	CARBON	1K 5% 1/4W				
R602	1-249-418-11	CARBON	1.2K 5% 1/4W				
R603	1-249-425-11	CARBON	4.7K 5% 1/4W				
R604	1-249-405-11	CARBON	100 5% 1/4W				
R605	1-215-437-00	METAL	4.7K 1% 1/4W				
R606	1-249-430-11	CARBON	12K 5% 1/4W				
R607	1-249-433-11	CARBON	22K 5% 1/4W				

<VARIABLE RESISTOR>

RV101 1-237-514-21 RES, ADJ, CERMET 500
RV201 1-237-514-21 RES, ADJ, CERMET 500
RV401 1-237-514-21 RES, ADJ, CERMET 500
RV501 1-237-514-21 RES, ADJ, CERMET 500
RV601 1-237-514-21 RES, ADJ, CERMET 500



BC

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
*A-1135-357-A BC BOARD, COMPLETE (BYM-1916 ONLY) *****				C132	1-124-034-51	ELECT 33MF	20% 16V
				C133	1-124-034-51	ELECT 33MF	20% 16V
*4-353-708-00 HOOK, FINGER				C136	1-101-004-00	CERAMIC 0.01MF	50V
7-682-950-01 SCREW +PSW 3X12				C137	1-101-004-00	CERAMIC 0.01MF	50V
7-685-871-01 SCREW +BVTT 3X6				C138	1-101-004-00	CERAMIC 0.01MF	50V
				C139	1-101-004-00	CERAMIC 0.01MF	50V
				C143	1-101-004-00	CERAMIC 0.01MF	50V
<CAPACITOR>				C144	1-126-233-11	ELECT 22MF	20% 25V
C1	1-102-951-00	CERAMIC 15PF	5% 50V	C201	1-124-917-11	ELECT 33MF	20% 25V
C2	1-102-951-00	CERAMIC 15PF	5% 50V	C202	1-101-004-00	CERAMIC 0.01MF	50V
C3	1-102-947-00	CERAMIC 10PF	5% 50V	<TRIMMER>			
C4	1-101-880-00	CERAMIC 47PF	5% 50V	CV1	1-141-171-00	CAP, TRIMMER 15P	
C5	1-102-965-00	CERAMIC 39PF	5% 50V	CV2	1-141-171-00	CAP, TRIMMER 15P	
C6	1-101-004-00	CERAMIC 0.01MF	50V	<DIODE>			
C7	1-102-935-00	CERAMIC 2PF	0.25PF 50V	D1	8-719-911-19	DIODE 1SS119	
C8	1-101-361-00	CERAMIC 39PF	5% 50V	D2	8-719-920-95	DIODE 1T25-0	
C9	1-126-966-11	ELECT 10MF	20% 16V	D3	8-719-911-19	DIODE 1SS119	
C10	1-126-966-11	ELECT 10MF	20% 16V	D4	8-719-110-13	DIODE RD9.1ESB2	
C11	1-101-004-00	CERAMIC 0.01MF	50V	D5	8-719-911-19	DIODE 1SS119	
C12	1-101-004-00	CERAMIC 0.01MF	50V	D6	8-719-911-19	DIODE 1SS119	
C13	1-101-004-00	CERAMIC 0.01MF	50V	D7	8-719-911-19	DIODE 1SS119	
C14	1-101-004-00	CERAMIC 0.01MF	50V	<IC>			
C15	1-124-910-11	ELECT 47MF	20% 16V	IC1	8-759-204-21	IC TA7193P	
C16	1-124-910-11	ELECT 47MF	20% 16V	IC2	8-752-006-12	IC CX20061	
C17	1-124-034-51	ELECT 33MF	20% 16V	IC3	8-759-140-53	IC UPD4053BC	
C18	1-101-004-00	CERAMIC 0.01MF	50V	<COIL>			
C19	1-102-953-00	CERAMIC 18PF	5% 50V	L1	1-408-533-00	COIL, VARIABLE	
C20	1-102-951-00	CERAMIC 15PF	5% 50V	L2	1-408-513-00	COIL (VARIABLE)	
C22	1-101-884-00	CERAMIC 56PF	5% 50V	L3	1-408-533-00	COIL, VARIABLE	
C23	1-123-369-00	ELECT 4.7MF	20% 25V	L4	1-408-429-00	INDUCTOR 470UH	
C24	1-163-157-00	FILM 0.022MF	5% 50V	L5	1-408-429-00	INDUCTOR 470UH	
C25	1-163-157-00	FILM 0.022MF	5% 50V	L6	1-408-429-00	INDUCTOR 470UH	
C26	1-101-004-00	CERAMIC 0.01MF	50V	<TRANSISTOR>			
C27	1-101-004-00	CERAMIC 0.01MF	50V	Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C28	1-124-902-00	ELECT 0.47MF	20% 50V	Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C29	1-101-004-00	CERAMIC 0.01MF	50V	Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C30	1-101-004-00	CERAMIC 0.01MF	50V	Q4	8-729-800-10	TRANSISTOR 2SC3068	
C31	1-124-119-00	ELECT 330MF	20% 16V	Q5	8-729-800-10	TRANSISTOR 2SC3068	
C34	1-109-676-00	MICA 130PF	1% 500V	Q6	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C35	1-109-631-00	MICA 330PF	1% 500V	Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C36	1-102-960-00	CERAMIC 24PF	5% 50V	Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C39	1-109-676-00	MICA 130PF	1% 500V	Q9	8-729-384-48	TRANSISTOR 2SA844-E	
C40	1-109-631-00	MICA 330PF	1% 500V	Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C41	1-102-960-00	CERAMIC 24PF	5% 50V	Q11	8-729-384-48	TRANSISTOR 2SA844-E	
C42	1-101-004-00	CERAMIC 0.01MF	50V	Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C50	1-102-942-00	CERAMIC 5PF	0.5PF 50V	Q13	8-729-384-48	TRANSISTOR 2SC3068	
C101	1-124-034-51	ELECT 33MF	20% 16V	Q14	8-729-384-48	TRANSISTOR 2SA844-E	
C102	1-101-004-00	CERAMIC 0.01MF	50V	Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C103	1-124-917-11	ELECT 33MF	20% 25V	Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C104	1-124-034-51	ELECT 33MF	20% 16V	Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C105	1-101-004-00	CERAMIC 0.01MF	50V	Q18	8-729-800-10	TRANSISTOR 2SC3068	
C106	1-124-917-11	ELECT 33MF	20% 25V	Q19	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C107	1-101-004-00	CERAMIC 0.01MF	50V	Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE	
C111	1-124-034-51	ELECT 33MF	20% 16V	Q21	8-729-800-10	TRANSISTOR 2SC3068	
C112	1-124-034-51	ELECT 33MF	20% 16V	Q101	8-729-140-97	TRANSISTOR 2SB734-34	
C113	1-124-034-51	ELECT 33MF	20% 16V				
C116	1-101-004-00	CERAMIC 0.01MF	50V				
C117	1-101-004-00	CERAMIC 0.01MF	50V				
C118	1-101-004-00	CERAMIC 0.01MF	50V				
C121	1-124-034-51	ELECT 33MF	20% 16V				
C122	1-124-034-51	ELECT 33MF	20% 16V				
C123	1-124-034-51	ELECT 33MF	20% 16V				
C126	1-101-004-00	CERAMIC 0.01MF	50V				
C127	1-101-004-00	CERAMIC 0.01MF	50V				
C128	1-101-004-00	CERAMIC 0.01MF	50V				
C131	1-124-034-51	ELECT 33MF	20% 16V				

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
Q103	8-729-900-63	TRANSISTOR DTA124ES		R63	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q104	8-729-900-63	TRANSISTOR DTA124ES		R64	1-249-429-11	CARBON 10K 5% 1/4W	
<RESISTOR>				R65	1-215-421-00	METAL 1K 1% 1/4W	
R1	1-249-428-11	CARBON 8.2K 5% 1/4W		R66	1-249-427-11	CARBON 6.8K 5% 1/4W	
R2	1-249-429-11	CARBON 10K 5% 1/4W		R69	1-215-420-00	METAL 910 1% 1/4W	
R3	1-249-405-11	CARBON 100 5% 1/4W		R70	1-215-420-00	METAL 910 1% 1/4W	
R4	1-249-422-11	CARBON 2.7K 5% 1/4W		R71	1-215-417-00	METAL 680 1% 1/4W	
R5	1-215-421-00	METAL 1K 1% 1/4W		R72	1-249-422-11	CARBON 2.7K 5% 1/4W	
R6	1-215-398-00	METAL 110 1% 1/4W		R73	1-249-405-11	CARBON 100 5% 1/4W	
R7	1-249-405-11	CARBON 100 5% 1/4W		R74	1-215-421-00	METAL 1K 1% 1/4W	
R8	1-215-421-00	METAL 1K 1% 1/4W		R77	1-249-427-11	CARBON 6.8K 5% 1/4W	
R9	1-215-421-00	METAL 1K 1% 1/4W		R78	1-215-420-00	METAL 910 1% 1/4W	
R10	1-215-423-00	METAL 1.2K 1% 1/4W		R79	1-215-420-00	METAL 910 1% 1/4W	
R11	1-249-405-11	CARBON 100 5% 1/4W		R80	1-215-417-00	METAL 680 1% 1/4W	
R12	1-215-425-00	METAL 1.5K 1% 1/4W		R81	1-249-422-11	CARBON 2.7K 5% 1/4W	
R13	1-215-425-00	METAL 1.5K 1% 1/4W		R82	1-249-405-11	CARBON 100 5% 1/4W	
R14	1-215-405-00	METAL 220 1% 1/4W		R83	1-215-481-00	METAL 330K 1% 1/4W	
R15	1-249-405-11	CARBON 100 5% 1/4W		R85	1-215-429-00	METAL 2.2K 1% 1/4W	
R16	1-249-433-11	CARBON 22K 5% 1/4W		R86	1-215-415-00	METAL 560 1% 1/4W	
R17	1-249-433-11	CARBON 22K 5% 1/4W		R87	1-215-477-00	METAL 220K 1% 1/4W	
R18	1-249-421-11	CARBON 2.2K 5% 1/4W		R88	1-215-457-00	METAL 33K 1% 1/4W	
R19	1-249-425-11	CARBON 4.7K 5% 1/4W		R90	1-249-429-11	CARBON 10K 5% 1/4W	
R20	1-249-429-11	CARBON 10K 5% 1/4W		R91	1-249-433-11	CARBON 22K 5% 1/4W	
R22	1-249-429-11	CARBON 10K 5% 1/4W		R95	1-249-429-11	CARBON 10K 5% 1/4W	
R23	1-249-431-11	CARBON 15K 5% 1/4W		R96	1-249-433-11	CARBON 22K 5% 1/4W	
R24	1-249-428-11	CARBON 8.2K 5% 1/4W		R101	1-249-423-11	CARBON 3.3K 5% 1/4W	
R25	1-249-405-11	CARBON 100 5% 1/4W		R102	1-249-419-11	CARBON 1.5K 5% 1/4W	
R26	1-249-417-11	CARBON 1K 5% 1/4W		R103	1-249-427-11	CARBON 6.8K 5% 1/4W	
R27	1-249-405-11	CARBON 100 5% 1/4W		R104	1-249-422-11	CARBON 2.7K 5% 1/4W	
R28	1-249-417-11	CARBON 1K 5% 1/4W		R105	1-249-429-11	CARBON 10K 5% 1/4W	
R29	1-249-405-11	CARBON 100 5% 1/4W		R202	1-249-429-11	CARBON 10K 5% 1/4W	
R30	1-249-425-11	CARBON 4.7K 5% 1/4W		<VARIABLE RESISTOR>			
R31	1-249-425-11	CARBON 4.7K 5% 1/4W		RV1	1-237-500-21	RES, ADJ, CERMET 1K	
R32	1-249-433-11	CARBON 22K 5% 1/4W		RV2	1-237-504-21	RES, ADJ, CERMET 20K	
R33	1-249-405-11	CARBON 100 5% 1/4W		RV3	1-237-499-21	RES, ADJ, CERMET 500	
R34	1-215-425-00	METAL 1.5K 1% 1/4W		RV4	1-237-501-21	RES, ADJ, CERMET 2K	
R35	1-215-425-00	METAL 1.5K 1% 1/4W		RV5	1-237-501-21	RES, ADJ, CERMET 2K	
R36	1-215-425-00	METAL 1.5K 1% 1/4W		<CRYSTAL>			
R37	1-215-425-00	METAL 1.5K 1% 1/4W		X1	1-567-505-11	OSCILLATOR, CRYSTAL	
R38	1-215-439-00	METAL 5.6K 1% 1/4W		*****			
R39	1-215-469-00	METAL 100K 1% 1/4W		*A-1135-391-A BD BOARD, COMPLETE (BYM-2016P ONLY)			
R40	1-247-903-91	CARBON 1M 5% 1/4W		*****			
R41	1-249-427-11	CARBON 6.8K 5% 1/4W		*4-353-708-00 HOOK, FINGER			
R42	1-249-420-11	CARBON 1.8K 5% 1/4W		7-682-950-01 SCREW +PSW 3X12			
R43	1-249-415-11	CARBON 680 5% 1/4W		7-685-871-01 SCREW +BVT 3X6 (S)			
R44	1-249-418-11	CARBON 1.2K 5% 1/4W		<CAPACITOR>			
R45	1-249-422-11	CARBON 2.7K 5% 1/4W		C1	1-102-947-00	CERAMIC 10PF 0.5PF 50V	
R47	1-249-413-11	CARBON 470 5% 1/4W		C2	1-102-947-00	CERAMIC 10PF 0.5PF 50V	
R49	1-249-413-11	CARBON 470 5% 1/4W		C3	1-102-963-00	CERAMIC 33PF 5% 50V	
R50	1-249-405-11	CARBON 100 5% 1/4W		C4	1-101-880-00	CERAMIC 47PF 5% 50V	
R51	1-215-417-00	METAL 680 1% 1/4W		C6	1-101-888-00	CERAMIC 68PF 5% 50V	
R52	1-215-417-00	METAL 680 1% 1/4W		C7	1-102-963-00	CERAMIC 33PF 5% 50V	
R53	1-215-413-00	METAL 470 1% 1/4W		C8	1-102-943-00	CERAMIC 6PF 0.5PF 50V	
R54	1-215-443-00	METAL 8.2K 1% 1/4W		C9	1-126-966-11	ELECT 10MF 20% 16V	
R55	1-249-421-11	CARBON 2.2K 5% 1/4W		C10	1-126-966-11	ELECT 10MF 20% 16V	
R56	1-249-441-11	CARBON 100K 5% 1/4W		C11	1-101-004-00	CERAMIC 0.01MF 50V	
R57	1-249-417-11	CARBON 1K 5% 1/4W					
R58	1-249-417-11	CARBON 1K 5% 1/4W					
R59	1-249-429-11	CARBON 10K 5% 1/4W					
R60	1-249-433-11	CARBON 22K 5% 1/4W					
R61	1-249-420-11	CARBON 1.8K 5% 1/4W					
R62	1-249-429-11	CARBON 10K 5% 1/4W					

7. ELECTRICAL PARTS LIST

7-6



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
IC5	8-759-140-53	IC UPD4053BC		R5	1-215-395-00	METAL	82 1% 1/4W
IC6	8-759-800-81	IC LA7016		R6	1-215-421-00	METAL	1K 1% 1/4W
IC7	8-759-145-58	IC UPC4558C		R7	1-215-421-00	METAL	1K 1% 1/4W
IC8	8-759-145-58	IC UPC4558C		R8	1-215-423-00	METAL	1.2K 1% 1/4W
<COIL>				R9	1-215-421-00	METAL	1K 1% 1/4W
L1	1-408-533-00	COIL, VARIABLE		R10	1-215-421-00	METAL	1K 1% 1/4W
L2	1-408-532-00	COIL, VARIABLE		R11	1-215-391-00	METAL	56 1% 1/4W
L3	1-408-100-00	COIL (VARIABLE)		R12	1-215-427-00	METAL	1.8K 1% 1/4W
L4	1-408-421-00	INDUCTOR 100UH		R13	1-249-425-11	CARBON	4.7K 5% 1/4W
L5	1-408-429-00	INDUCTOR 470UH		R14	1-249-429-11	CARBON	10K 5% 1/4W
L6	1-408-429-00	INDUCTOR 470UH		R15	1-249-429-11	CARBON	10K 5% 1/4W
L8	1-408-421-00	INDUCTOR 100UH		R17	1-249-433-11	CARBON	22K 5% 1/4W
L101	1-408-421-00	INDUCTOR 100UH		R18	1-215-425-00	METAL	1.5K 1% 1/4W
L102	1-408-421-00	INDUCTOR 100UH		R19	1-215-425-00	METAL	1.5K 1% 1/4W
<TRANSISTOR>				R20	1-215-425-00	METAL	1.5K 1% 1/4W
Q1	8-729-119-78	TRANSISTOR 2SC2785-HFE		R21	1-215-425-00	METAL	1.5K 1% 1/4W
Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE		R22	1-249-405-11	CARBON	100 5% 1/4W
Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE		R23	1-215-441-00	METAL	6.8K 1% 1/4W
Q4	8-729-800-10	TRANSISTOR 2SC3068		R24	1-215-469-00	METAL	100K 1% 1/4W
Q5	8-729-800-10	TRANSISTOR 2SC3068		R25	1-249-427-11	CARBON	6.8K 5% 1/4W
Q6	8-729-384-48	TRANSISTOR 2SA844-E		R26	1-249-415-11	CARBON	680 5% 1/4W
Q7	8-729-119-78	TRANSISTOR 2SC2785-HFE		R27	1-249-415-11	CARBON	680 5% 1/4W
Q8	8-729-384-48	TRANSISTOR 2SA844-E		R28	1-249-420-11	CARBON	1.8K 5% 1/4W
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE		R29	1-249-422-11	CARBON	2.7K 5% 1/4W
Q10	8-729-119-76	TRANSISTOR 2SA1175-HFE		R30	1-249-405-11	CARBON	100 5% 1/4W
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE		R31	1-247-903-91	CARBON	1M 5% 1/4W
Q12	8-729-119-78	TRANSISTOR 2SC2785-HFE		R32	1-249-429-11	CARBON	10K 5% 1/4W
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE		R34	1-215-407-00	METAL	270 1% 1/4W
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE		R35	1-215-407-00	METAL	270 1% 1/4W
Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE		R36	1-215-413-00	METAL	470 1% 1/4W
Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE		R37	1-215-443-00	METAL	8.2K 1% 1/4W
Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE		R38	1-249-441-11	CARBON	100K 5% 1/4W
Q18	8-729-600-19	TRANSISTOR 2SK381-A		R39	1-215-425-00	METAL	1.5K 1% 1/4W
Q20	8-729-119-76	TRANSISTOR 2SA1175-HFE		R40	1-215-421-00	METAL	1K 1% 1/4W
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE		R41	1-215-429-00	METAL	2.2K 1% 1/4W
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE		R42	1-215-445-00	METAL	10K 1% 1/4W
Q23	8-729-384-48	TRANSISTOR 2SA844-E		R43	1-215-421-00	METAL	1K 1% 1/4W
Q24	8-729-119-78	TRANSISTOR 2SC2785-HFE		R44	1-249-433-11	CARBON	22K 5% 1/4W
Q25	8-729-800-10	TRANSISTOR 2SC3068		R45	1-249-429-11	CARBON	10K 5% 1/4W
Q26	8-729-600-19	TRANSISTOR 2SK381-A		R46	1-249-429-11	CARBON	10K 5% 1/4W
Q28	8-729-119-76	TRANSISTOR 2SA1175-HFE		R47	1-249-441-11	CARBON	100K 5% 1/4W
Q29	8-729-119-78	TRANSISTOR 2SC2785-HFE		R48	1-249-425-11	CARBON	4.7K 5% 1/4W
Q30	8-729-119-78	TRANSISTOR 2SC2785-HFE		R54	1-249-422-11	CARBON	2.7K 5% 1/4W
Q31	8-729-384-48	TRANSISTOR 2SA844-E		R55	1-215-418-00	METAL	750 1% 1/4W
Q32	8-729-119-78	TRANSISTOR 2SC2785-HFE		R56	1-215-420-00	METAL	910 1% 1/4W
Q33	8-729-800-10	TRANSISTOR 2SC3068		R57	1-249-415-11	CARBON	680 5% 1/4W
Q34	8-729-119-78	TRANSISTOR 2SC2785-HFE		R58	1-249-422-11	CARBON	2.7K 5% 1/4W
Q35	8-729-119-78	TRANSISTOR 2SC2785-HFE		R59	1-249-422-11	CARBON	2.7K 5% 1/4W
Q36	8-729-119-78	TRANSISTOR 2SC2785-HFE		R60	1-215-418-00	METAL	750 1% 1/4W
Q38	8-729-119-78	TRANSISTOR 2SC2785-HFE		R61	1-215-420-00	METAL	910 1% 1/4W
Q101	8-729-140-97	TRANSISTOR 2SB734-34		R62	1-249-415-11	CARBON	680 5% 1/4W
Q102	8-729-320-62	TRANSISTOR 2SD789-34		R63	1-249-422-11	CARBON	2.7K 5% 1/4W
Q103	8-729-900-63	TRANSISTOR DTA124ES		R64	1-215-477-00	METAL	220K 1% 1/4W
Q104	8-729-900-63	TRANSISTOR DTA124ES		R65	1-215-435-00	METAL	3.9K 1% 1/4W
<RESISTOR>				R66	1-249-405-11	CARBON	100 5% 1/4W
R1	1-249-428-11	CARBON	8.2K 5% 1/4W	R70	1-247-903-91	CARBON	1M 5% 1/4W
R2	1-249-429-11	CARBON	10K 5% 1/4W	R71	1-249-429-11	CARBON	10K 5% 1/4W
R3	1-249-422-11	CARBON	2.7K 5% 1/4W	R72	1-249-429-11	CARBON	10K 5% 1/4W
R4	1-215-425-00	METAL	1.5K 1% 1/4W	R73	1-249-429-11	CARBON	10K 5% 1/4W
				R74	1-249-417-11	CARBON	1K 5% 1/4W
				R75	1-249-427-11	CARBON	6.8K 5% 1/4W
				R76	1-249-427-11	CARBON	6.8K 5% 1/4W
				R77	1-249-425-11	CARBON	4.7K 5% 1/4W

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1. The first step is to identify the problem or question that needs to be addressed. This involves understanding the context and the specific requirements of the task.

REF.NO.	PART NO.	DESCRIPTION			REMARK	REF.NO.	PART NO.	DESCRIPTION			REMARK
R78	1-215-424-00	METAL	1.3K	1%	1/4W	R320	1-215-472-00	METAL	130K	1%	1/4W
R79	1-215-419-00	METAL	820	1%	1/4W						
R80	1-215-425-00	METAL	1.5K	1%	1/4W	R353	1-249-432-11	CARBON	18K	5%	1/4W
R81	1-249-422-11	CARBON	2.7K	5%	1/4W	R354	1-249-432-11	CARBON	18K	5%	1/4W
R82	1-249-425-11	CARBON	4.7K	5%	1/4W	R400	1-215-429-00	METAL	2.2K	1%	1/4W
R83	1-249-435-11	CARBON	33K	5%	1/4W			<VARIABLE RESISTOR>			
R84	1-249-435-11	CARBON	33K	5%	1/4W	RV1	1-237-515-21	RES. ADJ. CERMET	1K		
R85	1-247-903-91	CARBON	1M	5%	1/4W	RV2	1-237-499-21	RES. ADJ. CERMET	500		
R86	1-249-429-11	CARBON	10K	5%	1/4W	RV3	1-237-501-21	RES. ADJ. CERMET	2K		
R87	1-249-429-11	CARBON	10K	5%	1/4W	RV4	1-237-501-21	RES. ADJ. CERMET	2K		
						RV5	1-237-517-21	RES. ADJ. CERMET	5K		
R88	1-249-429-11	CARBON	10K	5%	1/4W						
R89	1-249-417-11	CARBON	1K	5%	1/4W	RV6	1-237-517-21	RES. ADJ. CERMET	5K		
R90	1-249-427-11	CARBON	6.8K	5%	1/4W	RV7	1-237-504-21	RES. ADJ. CERMET	20K		
R91	1-249-427-11	CARBON	6.8K	5%	1/4W	RV8	1-237-504-21	RES. ADJ. CERMET	20K		
R92	1-249-425-11	CARBON	4.7K	5%	1/4W	RV9	1-237-517-21	RES. ADJ. CERMET	5K		
						RV10	1-237-517-21	RES. ADJ. CERMET	5K		
R93	1-215-424-00	METAL	1.3K	1%	1/4W			<CRYSTAL>			
R94	1-215-419-00	METAL	820	1%	1/4W	X1	1-567-504-11	OSCILLATOR, CRYSTAL			
R95	1-215-425-00	METAL	1.5K	1%	1/4W	X2	1-567-409-11	VIBRATOR, CRYSTAL			
R96	1-249-422-11	CARBON	2.7K	5%	1/4W						
R97	1-249-425-11	CARBON	4.7K	5%	1/4W						
R98	1-249-435-11	CARBON	33K	5%	1/4W						
R99	1-249-435-11	CARBON	33K	5%	1/4W						
R100	1-215-438-00	METAL	5.1K	1%	1/4W						
R101	1-215-438-00	METAL	5.1K	1%	1/4W						
R102	1-215-438-00	METAL	5.1K	1%	1/4W						
R103	1-215-438-00	METAL	5.1K	1%	1/4W						
R104	1-249-437-11	CARBON	47K	5%	1/4W						
R105	1-249-438-11	CARBON	56K	5%	1/4W						
R106	1-249-417-11	CARBON	1K	5%	1/4W						
R107	1-249-417-11	CARBON	1K	5%	1/4W						
R108	1-249-417-11	CARBON	1K	5%	1/4W						
R109	1-249-417-11	CARBON	1K	5%	1/4W						
R110	1-249-417-11	CARBON	1K	5%	1/4W						
R115	1-215-438-00	METAL	5.1K	1%	1/4W						
R116	1-215-438-00	METAL	5.1K	1%	1/4W						
R120	1-249-429-11	CARBON	10K	5%	1/4W						
R121	1-249-429-11	CARBON	10K	5%	1/4W						
R130	1-215-477-00	METAL	220K	1%	1/4W						
R150	1-249-441-11	CARBON	100K	5%	1/4W						
R201	1-249-423-11	CARBON	3.3K	5%	1/4W						
R202	1-249-423-11	CARBON	3.3K	5%	1/4W						
R203	1-249-422-11	CARBON	2.7K	5%	1/4W						
R204	1-249-423-11	CARBON	3.3K	5%	1/4W						
R220	1-249-441-11	CARBON	100K	5%	1/4W						
R221	1-249-433-11	CARBON	22K	5%	1/4W						
R222	1-249-433-11	CARBON	22K	5%	1/4W						
R250	1-215-415-00	METAL	560	1%	1/4W						
R251	1-215-415-00	METAL	560	1%	1/4W						
R252	1-215-421-00	METAL	1K	1%	1/4W						
R254	1-249-429-11	CARBON	10K	5%	1/4W						
R255	1-249-441-11	CARBON	100K	5%	1/4W						
R259	1-215-421-00	METAL	1K	1%	1/4W						
R301	1-215-469-00	METAL	100K	1%	1/4W						
R302	1-215-491-00	METAL	820K	1%	1/4W						
R303	1-249-418-11	CARBON	1.2K	5%	1/4W						
R305	1-249-431-11	CARBON	15K	5%	1/4W						
R306	1-249-428-11	CARBON	8.2K	5%	1/4W						
R307	1-249-417-11	CARBON	1K	5%	1/4W						
R308	1-249-417-11	CARBON	1K	5%	1/4W						
R310	1-249-422-11	CARBON	2.7K	5%	1/4W						
R314	1-215-417-00	METAL	680	1%	1/4W						
R315	1-249-422-11	CARBON	2.7K	5%	1/4W						
R316	1-249-413-11	CARBON	470	5%	1/4W						
R317	1-249-413-11	CARBON	470	5%	1/4W						
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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK	
C117	1-101-004-00	CERAMIC	0.01MF	50V	IC1	8-759-800-81	IC LA7016	
C131	1-126-103-11	ELECT	470MF	20%	16V	IC2	8-766-001-49	TRANSISTOR TX-429M
C132	1-124-034-51	ELECT	33MF	20%	16V	IC3	8-759-145-58	IC UPC4558C
C133	1-124-119-00	ELECT	330MF	20%	16V	IC4	8-757-182-14	IC CX-718D-1
C135	1-126-103-11	ELECT	470MF	20%	16V	IC5	8-759-140-53	IC UPD4053BC
C136	1-124-034-51	ELECT	33MF	20%	16V	IC6	8-759-140-53	IC UPD4053BC
C141	1-101-004-00	CERAMIC	0.01MF	50V	IC7	8-759-503-91	IC TL082ACP	
C142	1-101-004-00	CERAMIC	0.01MF	50V				
C143	1-101-004-00	CERAMIC	0.01MF	50V				
C144	1-101-004-00	CERAMIC	0.01MF	50V				
C145	1-101-004-00	CERAMIC	0.01MF	50V				
C146	1-101-004-00	CERAMIC	0.01MF	50V				
C147	1-101-004-00	CERAMIC	0.01MF	50V				
<COMPOSITION CIRCUIT BLOCK>				<COIL>				
CP11	1-232-726-11	COMPOSITION CIRCUIT BLOCK		L2	1-408-408-00	INDUCTOR	8.2UH	
CP12	1-232-728-11	COMPOSITION CIRCUIT BLOCK						
CP13	1-232-726-11	COMPOSITION CIRCUIT BLOCK						
CP14	1-233-018-11	COMPOSITION CIRCUIT BLOCK						
CP15	1-233-019-11	COMPOSITION CIRCUIT BLOCK						
CP16	1-233-031-11	COMPOSITION CIRCUIT BLOCK						
CP17	1-233-032-11	COMPOSITION CIRCUIT BLOCK						
CP18	1-233-013-11	COMPOSITION CIRCUIT BLOCK						
CP19	1-233-017-11	COMPOSITION CIRCUIT BLOCK						
CP20	1-232-752-11	COMPOSITION CIRCUIT BLOCK						
CP21	1-232-726-11	COMPOSITION CIRCUIT BLOCK						
CP22	1-232-728-11	COMPOSITION CIRCUIT BLOCK						
CP23	1-232-726-11	COMPOSITION CIRCUIT BLOCK						
CP25	1-232-730-11	COMPOSITION CIRCUIT BLOCK						
CP26	1-232-730-11	COMPOSITION CIRCUIT BLOCK						
CP27	1-231-765-00	COMPOSITION CIRCUIT BLOCK						
CP28	1-232-752-11	COMPOSITION CIRCUIT BLOCK						
CP29	1-232-728-11	COMPOSITION CIRCUIT BLOCK						
CP30	1-232-728-11	COMPOSITION CIRCUIT BLOCK						
CP31	1-232-734-11	COMPOSITION CIRCUIT BLOCK						
CP32	1-232-728-11	COMPOSITION CIRCUIT BLOCK						
CP33	1-232-738-11	COMPOSITION CIRCUIT BLOCK						
CP41	1-233-014-11	COMPOSITION CIRCUIT BLOCK						
CP42	1-233-014-11	COMPOSITION CIRCUIT BLOCK						
<TRIMMER>				<TRANSISTOR>				
CV2	1-141-181-11	CAP, TRIMMER		Q1	8-729-119-78	TRANSISTOR	2SC2785-HFE	
CV3	1-141-171-00	CAP, TRIMMER 20P		Q5	8-729-119-78	TRANSISTOR	2SC2785-HFE	
<DIODE>				Q7	8-729-119-78	TRANSISTOR	2SC2785-HFE	
D1	8-719-911-19	DIODE 1SS119		Q8	8-729-119-78	TRANSISTOR	2SC2785-HFE	
D2	8-719-911-19	DIODE 1SS119		Q9	8-729-119-78	TRANSISTOR	2SC2785-HFE	
D5	8-719-911-19	DIODE 1SS119		Q10	8-729-384-48	TRANSISTOR	2SA844-E	
D6	8-719-911-19	DIODE 1SS119		Q11	8-729-119-78	TRANSISTOR	2SC2785-HFE	
D7	8-719-911-19	DIODE 1SS119		Q12	8-729-119-78	TRANSISTOR	2SC2785-HFE	
D16	8-719-911-19	DIODE 1SS119		Q13	8-729-119-78	TRANSISTOR	2SC2785-HFE	
D17	8-719-911-19	DIODE 1SS119		Q14	8-729-800-10	TRANSISTOR	2SC3068	
<DELAY LINE>				Q21	8-729-384-48	TRANSISTOR	2SA844-E	
DL1	1-415-477-11	DELAY LINE		Q22	8-729-119-78	TRANSISTOR	2SC2785-HFE	
DL2	1-415-458-11	DELAY LINE		Q23	8-729-119-78	TRANSISTOR	2SC2785-HFE	
DL3	1-406-769-11	DELAY LINE		Q24	8-729-600-19	TRANSISTOR	2SK381-A	
DL4	1-406-769-11	DELAY LINE		Q25	8-729-384-48	TRANSISTOR	2SA844-E	
<IC>				Q26	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q27	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q28	8-729-600-19	TRANSISTOR	2SK381-A	
				Q29	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q30	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q31	8-729-384-48	TRANSISTOR	2SA844-E	
				Q32	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q33	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q34	8-729-600-19	TRANSISTOR	2SK381-A	
				Q35	8-729-384-48	TRANSISTOR	2SA844-E	
				Q36	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q37	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q38	8-729-600-19	TRANSISTOR	2SK381-A	
				Q39	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q40	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q41	8-729-384-48	TRANSISTOR	2SA844-E	
				Q42	8-729-384-48	TRANSISTOR	2SA844-E	
				Q43	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q44	8-729-384-48	TRANSISTOR	2SA844-E	
				Q45	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q49	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q50	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q71	8-729-384-48	TRANSISTOR	2SA844-E	
				Q72	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q73	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q74	8-729-384-48	TRANSISTOR	2SA844-E	
				Q75	8-729-800-10	TRANSISTOR	2SC3068	
				Q76	8-729-900-63	TRANSISTOR	DTA124ES	
				Q77	8-729-900-63	TRANSISTOR	DTA124ES	
				Q81	8-729-384-48	TRANSISTOR	2SA844-E	
				Q82	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q83	8-729-119-78	TRANSISTOR	2SC2785-HFE	
				Q84	8-729-384-48	TRANSISTOR	2SA844-E	
				Q85	8-729-800-10	TRANSISTOR	2SC3068	

BG

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
<RESISTOR>							
R1	1-249-405-11	CARBON	100 5% 1/4W	R66	1-249-417-11	CARBON	1K 5% 1/4W
R2	1-215-396-00	METAL	91 1% 1/4W	R67	1-249-423-11	CARBON	3.3K 5% 1/4W
R3	1-215-431-00	METAL	2.7K 1% 1/4W	R68	1-249-422-11	CARBON	2.7K 5% 1/4W
R4	1-249-419-11	CARBON	1.5K 5% 1/4W	R69	1-249-405-11	CARBON	100 5% 1/4W
R6	1-249-405-11	CARBON	100 5% 1/4W	R70	1-249-422-11	CARBON	2.7K 5% 1/4W
R7	1-249-405-11	CARBON	100 5% 1/4W	R71	1-247-903-91	CARBON	1M 5% 1/4W
R8	1-249-429-11	CARBON	10K 5% 1/4W	R72	1-247-866-11	CARBON	30K 5% 1/4W
R10	1-247-830-11	CARBON	910 5% 1/4W	R73	1-215-445-00	METAL	10K 1% 1/4W
R11	1-249-417-11	CARBON	1K 5% 1/4W	R74	1-249-420-11	CARBON	1.8K 5% 1/4W
R12	1-249-417-11	CARBON	1K 5% 1/4W	R75	1-249-422-11	CARBON	2.7K 5% 1/4W
R13	1-215-462-00	METAL	51K 1% 1/4W	R76	1-249-405-11	CARBON	100 5% 1/4W
R14	1-249-426-11	CARBON	5.6K 5% 1/4W	R77	1-249-422-11	CARBON	2.7K 5% 1/4W
R15	1-247-903-91	CARBON	1M 5% 1/4W	R78	1-249-422-11	CARBON	2.7K 5% 1/4W
R16	1-215-477-00	METAL	220K 1% 1/4W	R79	1-249-422-11	CARBON	2.7K 5% 1/4W
R17	1-249-429-11	CARBON	10K 5% 1/4W	R80	1-249-405-11	CARBON	100 5% 1/4W
R18	1-249-429-11	CARBON	10K 5% 1/4W	R81	1-249-422-11	CARBON	2.7K 5% 1/4W
R19	1-249-417-11	CARBON	1K 5% 1/4W	R82	1-247-903-91	CARBON	1M 5% 1/4W
R20	1-215-421-00	METAL	1K 1% 1/4W	R83	1-249-420-11	CARBON	1.8K 5% 1/4W
R21	1-215-421-00	METAL	1K 1% 1/4W	R84	1-249-405-11	CARBON	100 5% 1/4W
R22	1-249-441-11	CARBON	100K 5% 1/4W	R85	1-247-866-11	CARBON	30K 5% 1/4W
R23	1-215-409-00	METAL	330 1% 1/4W	R86	1-215-445-00	METAL	10K 1% 1/4W
R24	1-215-380-00	METAL	20 1% 1/4W	R87	1-249-422-11	CARBON	2.7K 5% 1/4W
R25	1-215-380-00	METAL	20 1% 1/4W	R88	1-215-430-00	METAL	2.4K 1% 1/4W
R26	1-215-409-00	METAL	330 1% 1/4W	R89	1-215-443-00	METAL	8.2K 1% 1/4W
R27	1-249-429-11	CARBON	10K 5% 1/4W	R90	1-249-430-11	CARBON	12K 5% 1/4W
R28	1-249-417-11	CARBON	1K 5% 1/4W	R91	1-249-405-11	CARBON	100 5% 1/4W
R29	1-215-418-00	METAL	750 1% 1/4W	R92	1-247-830-11	CARBON	910 5% 1/4W
R30	1-249-422-11	CARBON	2.7K 5% 1/4W	R93	1-215-421-00	METAL	1K 1% 1/4W
R31	1-249-405-11	CARBON	100 5% 1/4W	R94	1-249-422-11	CARBON	2.7K 5% 1/4W
R32	1-249-420-11	CARBON	1.8K 5% 1/4W	R98	1-249-422-11	CARBON	2.7K 5% 1/4W
R33	1-249-429-11	CARBON	10K 5% 1/4W	R99	1-249-422-11	CARBON	2.7K 5% 1/4W
R34	1-249-428-11	CARBON	8.2K 5% 1/4W	R161	1-215-438-00	METAL	5.1K 1% 1/4W
R35	1-249-417-11	CARBON	1K 5% 1/4W	R162	1-249-431-11	CARBON	15K 5% 1/4W
R36	1-249-422-11	CARBON	2.7K 5% 1/4W	R163	1-249-417-11	CARBON	1K 5% 1/4W
R37	1-249-405-11	CARBON	100 5% 1/4W	R164	1-215-435-00	METAL	3.9K 1% 1/4W
R40	1-249-425-11	CARBON	4.7K 5% 1/4W	R165	1-249-422-11	CARBON	2.7K 5% 1/4W
R41	1-249-422-11	CARBON	2.7K 5% 1/4W	R166	1-249-422-11	CARBON	2.7K 5% 1/4W
R42	1-249-417-11	CARBON	1K 5% 1/4W	R167	1-215-409-00	METAL	330 1% 1/4W
R43	1-249-417-11	CARBON	1K 5% 1/4W	R168	1-215-412-00	METAL	430 1% 1/4W
R44	1-249-431-11	CARBON	15K 5% 1/4W	R169	1-215-427-00	METAL	1.8K 1% 1/4W
R45	1-249-423-11	CARBON	3.3K 5% 1/4W	R170	1-249-425-11	CARBON	4.7K 5% 1/4W
R46	1-249-417-11	CARBON	1K 5% 1/4W	R171	1-215-436-00	METAL	4.3K 1% 1/4W
R47	1-249-423-11	CARBON	3.3K 5% 1/4W	R172	1-249-431-11	CARBON	15K 5% 1/4W
R48	1-249-422-11	CARBON	2.7K 5% 1/4W	R173	1-249-417-11	CARBON	1K 5% 1/4W
R49	1-249-405-11	CARBON	100 5% 1/4W	R174	1-215-435-00	METAL	3.9K 1% 1/4W
R50	1-249-422-11	CARBON	2.7K 5% 1/4W	R175	1-249-422-11	CARBON	2.7K 5% 1/4W
R51	1-247-903-91	CARBON	1M 5% 1/4W	R176	1-249-422-11	CARBON	2.7K 5% 1/4W
R52	1-247-866-11	CARBON	30K 5% 1/4W	R177	1-215-409-00	METAL	330 1% 1/4W
R53	1-215-445-00	METAL	10K 1% 1/4W	R178	1-215-414-00	METAL	510 1% 1/4W
R54	1-249-420-11	CARBON	1.8K 5% 1/4W	R179	1-215-422-00	METAL	1.1K 1% 1/4W
R55	1-249-422-11	CARBON	2.7K 5% 1/4W	R180	1-249-425-11	CARBON	4.7K 5% 1/4W
R56	1-249-405-11	CARBON	100 5% 1/4W	R181	1-215-380-00	METAL	20 1% 1/4W
R57	1-249-422-11	CARBON	2.7K 5% 1/4W	R182	1-215-380-00	METAL	20 1% 1/4W
R58	1-249-422-11	CARBON	2.7K 5% 1/4W	R183	1-249-433-11	CARBON	22K 5% 1/4W
R59	1-249-422-11	CARBON	2.7K 5% 1/4W	R184	1-249-425-11	CARBON	4.7K 5% 1/4W
R61	1-249-422-11	CARBON	2.7K 5% 1/4W	R201	1-249-437-11	CARBON	47K 5% 1/4W
R62	1-249-417-11	CARBON	1K 5% 1/4W	R202	1-249-429-11	CARBON	10K 5% 1/4W
R63	1-249-417-11	CARBON	1K 5% 1/4W	R203	1-249-435-11	CARBON	33K 5% 1/4W
R64	1-249-431-11	CARBON	15K 5% 1/4W	R204	1-247-872-11	CARBON	51K 5% 1/4W
R65	1-249-423-11	CARBON	3.3K 5% 1/4W	<VARIABLE RESISTOR>			
				RV1	1-237-514-21	RES, ADJ, CERMET 500	
				RV2	1-237-508-21	RES, ADJ, CERMET 500K	

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
RV3	1-237-498-21	RES, ADJ, CERMET 200		C86	1-101-004-00	CERAMIC	0.01MF
RV4	1-237-500-21	RES, ADJ, CERMET 1K		C101	1-161-021-11	CERAMIC	0.047MF
RV5	1-237-500-21	RES, ADJ, CERMET 1K		C102	1-102-942-00	CERAMIC	5PF
RV21	1-237-517-21	RES, ADJ, CERMET 5K		C103	1-102-959-00	CERAMIC	22PF
RV22	1-237-517-21	RES, ADJ, CERMET 5K		C104	1-126-966-11	ELECT	10MF
<SWITCH>				C105	1-161-021-11	CERAMIC	0.047MF
S1	1-570-857-11	SWITCH, SLIDE		C106	1-101-004-00	CERAMIC	0.01MF
*****				C107	1-161-021-11	CERAMIC	0.047MF
*A-1135-359-A	BH BOARD, COMPLETE	*****		C108	1-101-004-00	CERAMIC	0.01MF
*4-353-708-00	HOOK, FINGER			C109	1-101-004-00	CERAMIC	0.01MF
7-685-871-01	SCREW +BVT 3X6 (S)			C110	1-101-880-00	CERAMIC	47PF
<CAPACITOR>				C201	1-161-021-11	CERAMIC	0.047MF
C1	1-124-034-51	ELECT	33MF				
C2	1-124-034-51	ELECT	33MF				
C3	1-124-034-51	ELECT	33MF				
C4	1-124-034-51	ELECT	33MF				
C5	1-124-034-51	ELECT	33MF				
C6	1-124-034-51	ELECT	33MF				
C7	1-124-034-51	ELECT	33MF				
C8	1-124-034-51	ELECT	33MF				
C9	1-124-034-51	ELECT	33MF				
C10	1-124-034-51	ELECT	33MF				
C11	1-124-034-51	ELECT	33MF				
C12	1-124-034-51	ELECT	33MF				
C13	1-124-034-51	ELECT	33MF				
C14	1-124-034-51	ELECT	33MF				
C15	1-101-004-00	CERAMIC	0.01MF				
C16	1-101-004-00	CERAMIC	0.01MF				
C17	1-101-004-00	CERAMIC	0.01MF				
C18	1-101-004-00	CERAMIC	0.01MF				
C20	1-123-382-00	ELECT	3.3MF				
C21	1-126-966-11	ELECT	10MF				
C22	1-126-966-11	ELECT	10MF				
C23	1-126-966-11	ELECT	10MF				
C24	1-126-966-11	ELECT	10MF				
C26	1-101-004-00	CERAMIC	0.01MF				
C41	1-124-119-00	ELECT	330MF				
C42	1-124-119-00	ELECT	330MF				
C43	1-124-119-00	ELECT	330MF				
C44	1-126-966-11	ELECT	10MF				
C45	1-126-966-11	ELECT	10MF				
C50	1-126-966-11	ELECT	10MF				
C51	1-101-004-00	CERAMIC	0.01MF				
C52	1-101-004-00	CERAMIC	0.01MF				
C53	1-101-004-00	CERAMIC	0.01MF				
C54	1-101-004-00	CERAMIC	0.01MF				
C55	1-101-004-00	CERAMIC	0.01MF				
C71	1-124-119-00	ELECT	330MF				
C72	1-124-119-00	ELECT	330MF				
C73	1-124-119-00	ELECT	330MF				
C74	1-126-966-11	ELECT	10MF				
C80	1-126-966-11	ELECT	10MF				
C81	1-101-004-00	CERAMIC	0.01MF				
C82	1-101-004-00	CERAMIC	0.01MF				
C83	1-101-004-00	CERAMIC	0.01MF				
C84	1-101-004-00	CERAMIC	0.01MF				
C85	1-101-004-00	CERAMIC	0.01MF				
<COMPOSITION CIRCUIT BLOCK>				CP1	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP2	1-232-727-11	COMPOSITION CIRCUIT BLOCK		CP3	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
CP5	1-233-012-11	COMPOSITION CIRCUIT BLOCK		CP7	1-233-012-11	COMPOSITION CIRCUIT BLOCK	
CP9	1-232-735-11	COMPOSITION CIRCUIT BLOCK		CP10	1-231-760-00	COMPOSITION CIRCUIT BLOCK	
CP12	1-232-735-11	COMPOSITION CIRCUIT BLOCK		CP13	1-231-760-00	COMPOSITION CIRCUIT BLOCK	
CP15	1-232-735-11	COMPOSITION CIRCUIT BLOCK		CP16	1-232-749-11	COMPOSITION CIRCUIT BLOCK	
CP17	1-232-096-00	COMPOSITION CIRCUIT BLOCK		CP18	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
CP19	1-233-011-11	COMPOSITION CIRCUIT BLOCK		CP20	1-232-736-11	COMPOSITION CIRCUIT BLOCK	
CP21	1-232-736-11	COMPOSITION CIRCUIT BLOCK		CP22	1-232-745-11	COMPOSITION CIRCUIT BLOCK	
CP23	1-233-011-11	COMPOSITION CIRCUIT BLOCK		CP24	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
CP25	1-233-144-11	COMPOSITION CIRCUIT BLOCK		CP26	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
CP27	1-232-177-00	COMPOSITION CIRCUIT BLOCK		CP28	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
CP29	1-233-011-11	COMPOSITION CIRCUIT BLOCK		CP30	1-233-011-11	COMPOSITION CIRCUIT BLOCK	
CP31	1-233-011-11	COMPOSITION CIRCUIT BLOCK		CP32	1-232-737-11	COMPOSITION CIRCUIT BLOCK	
CP33	1-231-938-00	COMPOSITION CIRCUIT BLOCK		CP101	1-232-726-11	COMPOSITION CIRCUIT BLOCK	
CP102	1-232-726-11	COMPOSITION CIRCUIT BLOCK					

7. ELECTRICAL PARTS LIST

<DIODE>

<IC>

<TRANSISTOR>

REMARK

<RESISTOR>

REMARK

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R109	1-249-419-11	CARBON	1.5K 5% 1/4W	C1	1-130-481-00	MYLAR	0.0068MF 5% 50V
R110	1-215-427-00	METAL	1.8K 1% 1/4W	C2	1-136-165-00	FILM	0.1MF 5% 50V
R111	1-215-453-00	METAL	22K 1% 1/4W	C3	1-123-369-00	ELECT	4.7MF 20% 25V
R112	1-249-419-11	CARBON	1.5K 5% 1/4W	C4	1-123-369-00	ELECT	4.7MF 20% 25V
R113	1-249-405-11	CARBON	100 5% 1/4W	C5	1-102-973-00	CERAMIC	100PF 5% 50V
R114	1-215-445-00	METAL	10K 1% 1/4W	C7	1-126-233-11	ELECT	22MF 20% 25V
R115	1-215-445-00	METAL	10K 1% 1/4W	C8	1-123-369-00	ELECT	4.7MF 20% 25V
R116	1-249-429-11	CARBON	10K 5% 1/4W	C10	1-124-915-11	ELECT	10MF 20% 50V
R117	1-215-493-00	METAL	1M 1% 1/4W	C11	1-126-966-11	ELECT	10MF 20% 16V
R120	1-215-451-00	METAL	18K 1% 1/4W	C12	1-101-004-00	CERAMIC	0.01MF 50V
R121	1-215-453-00	METAL	22K 1% 1/4W	C13	1-101-004-00	CERAMIC	0.01MF 50V
R201	1-247-903-91	CARBON	1M 5% 1/4W	C14	1-101-004-00	CERAMIC	0.01MF 50V
R202	1-249-431-11	CARBON	15K 5% 1/4W	C15	1-126-233-11	ELECT	22MF 20% 16V
R203	1-249-419-11	CARBON	1.5K 5% 1/4W	C16	1-126-966-11	ELECT	10MF 20% 16V
R204	1-249-430-11	CARBON	12K 5% 1/4W	C17	1-101-004-00	CERAMIC	0.01MF 50V
R205	1-249-409-11	CARBON	220 5% 1/4W	C18	1-101-004-00	CERAMIC	0.01MF 50V
R206	1-249-419-11	CARBON	1.5K 5% 1/4W	C19	1-101-004-00	CERAMIC	0.01MF 50V
R207	1-215-425-00	METAL	1.5K 1% 1/4W	C41	1-124-034-51	ELECT	33MF 20% 16V
R208	1-249-415-11	CARBON	680 5% 1/4W	C42	1-124-034-51	ELECT	33MF 20% 16V
R209	1-249-419-11	CARBON	1.5K 5% 1/4W	C43	1-124-034-51	ELECT	33MF 20% 16V
R210	1-215-427-00	METAL	1.8K 1% 1/4W	C44	1-124-034-51	ELECT	33MF 20% 16V
R211	1-215-453-00	METAL	22K 1% 1/4W	C45	1-124-034-51	ELECT	33MF 20% 16V
R212	1-249-419-11	CARBON	1.5K 5% 1/4W	C46	1-124-034-51	ELECT	33MF 20% 16V
R213	1-249-405-11	CARBON	100 5% 1/4W	C51	1-101-004-00	CERAMIC	0.01MF 50V
R214	1-215-445-00	METAL	10K 1% 1/4W	C52	1-101-004-00	CERAMIC	0.01MF 50V
R215	1-215-445-00	METAL	10K 1% 1/4W	C53	1-101-004-00	CERAMIC	0.01MF 50V
R216	1-249-429-11	CARBON	10K 5% 1/4W	C54	1-101-004-00	CERAMIC	0.01MF 50V
R217	1-215-455-00	METAL	27K 1% 1/4W	C55	1-101-004-00	CERAMIC	0.01MF 50V
R301	1-247-903-91	CARBON	1M 5% 1/4W	C56	1-101-004-00	CERAMIC	0.01MF 50V
R302	1-249-431-11	CARBON	15K 5% 1/4W	C57	1-101-004-00	CERAMIC	0.01MF 50V
R303	1-249-419-11	CARBON	1.5K 5% 1/4W	C71	1-124-034-51	ELECT	33MF 20% 16V
R304	1-249-430-11	CARBON	12K 5% 1/4W	C72	1-124-034-51	ELECT	33MF 20% 16V
R305	1-249-409-11	CARBON	220 5% 1/4W	C73	1-124-034-51	ELECT	33MF 20% 16V
R306	1-249-419-11	CARBON	1.5K 5% 1/4W	C74	1-124-034-51	ELECT	33MF 20% 16V
R307	1-215-425-00	METAL	1.5K 1% 1/4W	C75	1-124-034-51	ELECT	33MF 20% 16V
R308	1-249-415-11	CARBON	680 5% 1/4W	C76	1-124-034-51	ELECT	33MF 20% 16V
R309	1-249-419-11	CARBON	1.5K 5% 1/4W	C81	1-101-004-00	CERAMIC	0.01MF 50V
R310	1-215-427-00	METAL	1.8K 1% 1/4W	C82	1-101-004-00	CERAMIC	0.01MF 50V
R311	1-215-453-00	METAL	22K 1% 1/4W	C83	1-101-004-00	CERAMIC	0.01MF 50V
R312	1-249-419-11	CARBON	1.5K 5% 1/4W	C84	1-101-004-00	CERAMIC	0.01MF 50V
R313	1-249-405-11	CARBON	100 5% 1/4W	C85	1-101-004-00	CERAMIC	0.01MF 50V
R314	1-215-445-00	METAL	10K 1% 1/4W	C86	1-101-004-00	CERAMIC	0.01MF 50V
R315	1-215-445-00	METAL	10K 1% 1/4W	C87	1-101-004-00	CERAMIC	0.01MF 50V
R316	1-249-429-11	CARBON	10K 5% 1/4W	C101	1-101-004-00	CERAMIC	0.01MF 50V
<VARIABLE RESISTOR>				C102	1-124-903-11	ELECT	1MF 20% 50V
RV1	1-237-505-21	RES. ADJ. CERMET 50K		C104	1-126-966-11	ELECT	10MF 20% 16V
RV2	1-237-505-21	RES. ADJ. CERMET 50K		C105	1-101-004-00	CERAMIC	0.01MF 50V
RV3	1-237-505-21	RES. ADJ. CERMET 50K		C106	1-136-161-00	FILM	0.047MF 5% 50V
<SWITCH>				C107	1-102-937-00	CERAMIC	4PF 0.25PF 50V
S1	1-570-857-11	SWITCH, SLIDE		C108	1-101-880-00	CERAMIC	47PF 5% 50V
S2	1-570-851-11	SWITCH, SLIDE		C109	1-136-161-00	FILM	0.047MF 5% 50V
*****				C110	1-136-161-00	FILM	0.047MF 5% 50V
*A-1135-591-A	BI BOARD, COMPLETE			C114	1-102-951-00	CERAMIC	15PF 5% 50V
*****				C115	1-136-153-00	FILM	0.01MF 5% 50V
*4-353-708-00	HOOK, FINGER			C116	1-102-973-00	CERAMIC	100PF 5% 50V
7-685-871-01	SCREW +BVTT 3X6 (S)			C117	1-101-004-00	CERAMIC	0.01MF 50V
<CAPACITOR>				C118	1-101-004-00	CERAMIC	0.01MF 50V
				C119	1-102-953-00	CERAMIC	18PF 5% 50V
				C120	1-102-973-00	CERAMIC	100PF 5% 50V
				C122	1-102-961-00	CERAMIC	27PF 5% 50V
				C201	1-101-004-00	CERAMIC	0.01MF 50V
				C202	1-124-903-11	ELECT	1MF 20% 50V
				C204	1-126-966-11	ELECT	10MF 20% 16V

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REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK	
C205	1-101-004-00	CERAMIC	0.01MF	50V	D104	8-719-911-19	DIODE 1SS119	
C206	1-136-161-00	FILM	0.047MF	5%	50V	D105	8-719-109-93	DIODE RD6.2ESB2
C207	1-102-937-00	CERAMIC	4PF	0.25PF	50V	D201	8-719-911-19	DIODE 1SS119
C208	1-101-880-00	CERAMIC	47PF	5%	50V	D202	8-719-016-42	DIODE MC932
C209	1-136-161-00	FILM	0.047MF	5%	50V	D203	8-719-109-74	DIODE RD4.3ESB1
C210	1-136-161-00	FILM	0.047MF	5%	50V	D204	8-719-911-19	DIODE 1SS119
C214	1-102-951-00	CERAMIC	15PF	5%	50V	D205	8-719-109-93	DIODE RD6.2ESB2
C215	1-136-153-00	FILM	0.01MF	5%	50V	D301	8-719-911-19	DIODE 1SS119
C216	1-102-973-00	CERAMIC	100PF	5%	50V	D302	8-719-016-42	DIODE MC932
C217	1-101-004-00	CERAMIC	0.01MF	50V	D303	8-719-109-74	DIODE RD4.3ESB1	
C218	1-101-004-00	CERAMIC	0.01MF	50V	D304	8-719-911-19	DIODE 1SS119	
C219	1-102-953-00	CERAMIC	18PF	5%	50V	D305	8-719-109-93	DIODE RD6.2ESB2
C220	1-102-973-00	CERAMIC	100PF	5%	50V			
C222	1-102-961-00	CERAMIC	27PF	5%	50V			
C301	1-101-004-00	CERAMIC	0.01MF	50V				
C302	1-124-903-11	ELECT	1MF	20%	50V			
C304	1-126-966-11	ELECT	10MF	20%	16V			
C305	1-101-004-00	CERAMIC	0.01MF	50V	IC1	8-759-145-58	IC UPC4558C	
C306	1-136-161-00	FILM	0.047MF	5%	50V	IC101	8-759-140-53	IC UPD4053BC
C307	1-102-937-00	CERAMIC	4PF	0.25PF	50V	IC102	8-766-001-49	TRANSISTOR TX-429M
C308	1-101-880-00	CERAMIC	47PF	5%	50V	IC103	8-759-503-91	IC TL082ACP
C309	1-136-161-00	FILM	0.047MF	5%	50V	IC104	8-759-503-91	IC TL082ACP
C310	1-136-161-00	FILM	0.047MF	5%	50V	IC105	8-759-503-91	IC TL082ACP
C314	1-102-951-00	CERAMIC	15PF	5%	50V	IC201	8-759-140-53	IC UPD4053BC
C315	1-136-153-00	FILM	0.01MF	5%	50V	IC202	8-766-001-49	TRANSISTOR TX-429M
C316	1-102-973-00	CERAMIC	100PF	5%	50V	IC203	8-759-503-91	IC TL082ACP
C317	1-101-004-00	CERAMIC	0.01MF	50V	IC204	8-759-503-91	IC TL082ACP	
C318	1-101-004-00	CERAMIC	0.01MF	50V	IC205	8-759-503-91	IC TL082ACP	
C319	1-102-953-00	CERAMIC	18PF	5%	50V	IC301	8-759-140-53	IC UPD4053BC
C320	1-102-973-00	CERAMIC	100PF	5%	50V	IC302	8-766-001-49	TRANSISTOR TX-429M
C322	1-102-961-00	CERAMIC	27PF	5%	50V	IC303	8-759-503-91	IC TL082ACP
					IC304	8-759-503-91	IC TL082ACP	
					IC305	8-759-503-91	IC TL082ACP	
<COMPOSITION CIRCUIT BLOCK>				<TRANSISTOR>				
CP3	1-231-765-00	COMPOSITION CIRCUIT BLOCK		Q1	8-729-900-74	TRANSISTOR DTC143TS		
CP4	1-231-765-00	COMPOSITION CIRCUIT BLOCK		Q2	8-729-119-78	TRANSISTOR 2SC2785-HFE		
CP5	1-231-765-00	COMPOSITION CIRCUIT BLOCK		Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE		
CP6	1-231-765-00	COMPOSITION CIRCUIT BLOCK		Q11	8-729-201-05	TRANSISTOR 2SC2878-B		
CP7	1-231-765-00	COMPOSITION CIRCUIT BLOCK		Q12	8-729-201-05	TRANSISTOR 2SC2878-B		
CP101	1-233-012-11	COMPOSITION CIRCUIT BLOCK		Q13	8-729-201-05	TRANSISTOR 2SC2878-B		
CP102	1-233-012-11	COMPOSITION CIRCUIT BLOCK		Q14	8-729-201-05	TRANSISTOR 2SC2878-B		
CP103	1-233-012-11	COMPOSITION CIRCUIT BLOCK		Q15	8-729-900-65	TRANSISTOR DTA144ES		
CP104	1-232-726-11	COMPOSITION CIRCUIT BLOCK		Q101	8-729-384-48	TRANSISTOR 2SA844-E		
CP201	1-233-012-11	COMPOSITION CIRCUIT BLOCK		Q102	8-729-384-48	TRANSISTOR 2SA844-E		
CP202	1-233-012-11	COMPOSITION CIRCUIT BLOCK		Q103	8-729-384-48	TRANSISTOR 2SA844-E		
CP203	1-233-012-11	COMPOSITION CIRCUIT BLOCK		Q105	8-729-600-19	TRANSISTOR 2SK381-A		
CP204	1-232-726-11	COMPOSITION CIRCUIT BLOCK		Q106	8-729-384-48	TRANSISTOR 2SA844-E		
CP301	1-233-012-11	COMPOSITION CIRCUIT BLOCK		Q107	8-729-266-82	TRANSISTOR 2SC2668-0		
CP302	1-233-012-11	COMPOSITION CIRCUIT BLOCK		Q108	8-729-384-48	TRANSISTOR 2SA844-E		
CP303	1-233-012-11	COMPOSITION CIRCUIT BLOCK		Q109	8-729-600-19	TRANSISTOR 2SK381-A		
CP304	1-232-726-11	COMPOSITION CIRCUIT BLOCK		Q110	8-729-600-19	TRANSISTOR 2SK381-A		
				Q113	8-729-600-19	TRANSISTOR 2SK381-A		
<DIODE>				Q114	8-729-200-17	TRANSISTOR 2SA1091-0		
D1	8-719-911-19	DIODE 1SS119		Q201	8-729-384-48	TRANSISTOR 2SA844-E		
D2	8-719-911-19	DIODE 1SS119		Q202	8-729-384-48	TRANSISTOR 2SA844-E		
D4	8-719-911-19	DIODE 1SS119		Q203	8-729-384-48	TRANSISTOR 2SA844-E		
D5	8-719-911-19	DIODE 1SS119		Q205	8-729-600-19	TRANSISTOR 2SK381-A		
D6	8-719-110-31	DIODE RD12ESB2		Q206	8-729-384-48	TRANSISTOR 2SA844-E		
D7	8-719-911-19	DIODE 1SS119		Q207	8-729-266-82	TRANSISTOR 2SC2668-0		
D8	8-719-911-19	DIODE 1SS119		Q208	8-729-384-48	TRANSISTOR 2SA844-E		
D101	8-719-911-19	DIODE 1SS119		Q209	8-729-600-19	TRANSISTOR 2SK381-A		
D102	8-719-016-42	DIODE MC932		Q210	8-729-600-19	TRANSISTOR 2SK381-A		
D103	8-719-109-74	DIODE RD4.3ESB1		Q213	8-729-600-19	TRANSISTOR 2SK381-A		

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
Q214	8-729-200-17	TRANSISTOR 2SA1091-0		R123	1-249-429-11	CARBON 10K 5% 1/4W	
Q301	8-729-384-48	TRANSISTOR 2SA844-E		R124	1-249-429-11	CARBON 10K 5% 1/4W	
Q302	8-729-384-48	TRANSISTOR 2SA844-E		R125	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q303	8-729-384-48	TRANSISTOR 2SA844-E		R127	1-215-445-00	METAL 10K 1% 1/4W	
Q305	8-729-600-19	TRANSISTOR 2SK381-A		R128	1-215-445-00	METAL 10K 1% 1/4W	
Q306	8-729-384-48	TRANSISTOR 2SA844-E		R136	1-215-477-00	METAL 220K 1% 1/4W	
Q307	8-729-266-82	TRANSISTOR 2SC2668-0		R137	1-249-417-11	CARBON 1K 5% 1/4W	
Q308	8-729-384-48	TRANSISTOR 2SA844-E		R138	1-249-441-11	CARBON 100K 5% 1/4W	
Q309	8-729-600-19	TRANSISTOR 2SK381-A		R140	1-249-429-11	CARBON 10K 5% 1/4W	
Q310	8-729-600-19	TRANSISTOR 2SK381-A		R141	1-215-469-00	METAL 100K 1% 1/4W	
Q313	8-729-600-19	TRANSISTOR 2SK381-A		R142	1-215-459-00	METAL 39K 1% 1/4W	
Q314	8-729-200-17	TRANSISTOR 2SA1091-0		R143	1-215-488-00	METAL 620K 1% 1/4W	
<RESISTOR>				R144	1-249-434-11	CARBON 27K 5% 1/4W	
R1	1-247-903-91	CARBON 1M 5% 1/4W		R145	1-249-429-11	CARBON 10K 5% 1/4W	
R2	1-249-429-11	CARBON 10K 5% 1/4W		R146	1-249-429-11	CARBON 10K 5% 1/4W	
R3	1-215-493-00	METAL 1M 1% 1/4W		R147	1-249-405-11	CARBON 100 5% 1/4W	
R4	1-215-469-00	METAL 100K 1% 1/4W		R150	1-249-405-11	CARBON 100 5% 1/4W	
R5	1-249-435-11	CARBON 33K 5% 1/4W		R201	1-249-441-11	CARBON 100K 5% 1/4W	
R8	1-249-435-11	CARBON 33K 5% 1/4W		R202	1-249-421-11	CARBON 2.2K 5% 1/4W	
R9	1-249-424-11	CARBON 3.9K 5% 1/4W		R204	1-215-469-00	METAL 100K 1% 1/4W	
R10	1-249-425-11	CARBON 4.7K 5% 1/4W		R205	1-215-476-00	METAL 200K 1% 1/4W	
R11	1-249-435-11	CARBON 33K 5% 1/4W		R206	1-215-427-00	METAL 1.8K 1% 1/4W	
R12	1-249-429-11	CARBON 10K 5% 1/4W		R207	1-249-435-11	CARBON 33K 5% 1/4W	
R13	1-249-425-11	CARBON 4.7K 5% 1/4W		R208	1-249-430-11	CARBON 12K 5% 1/4W	
R14	1-249-435-11	CARBON 33K 5% 1/4W		R209	1-249-417-11	CARBON 1K 5% 1/4W	
R15	1-249-429-11	CARBON 10K 5% 1/4W		R210	1-249-441-11	CARBON 100K 5% 1/4W	
R23	1-249-417-11	CARBON 1K 5% 1/4W		R211	1-249-417-11	CARBON 1K 5% 1/4W	
R24	1-249-417-11	CARBON 1K 5% 1/4W		R213	1-247-903-91	CARBON 1M 5% 1/4W	
R25	1-249-417-11	CARBON 1K 5% 1/4W		R214	1-249-419-11	CARBON 1.5K 5% 1/4W	
R31	1-249-430-11	CARBON 12K 5% 1/4W		R215	1-249-419-11	CARBON 1.5K 5% 1/4W	
R32	1-249-436-11	CARBON 39K 5% 1/4W		R216	1-249-424-11	CARBON 3.9K 5% 1/4W	
R33	1-249-430-11	CARBON 12K 5% 1/4W		R217	1-249-419-11	CARBON 1.5K 5% 1/4W	
R51	1-249-417-11	CARBON 1K 5% 1/4W		R218	1-215-421-00	METAL 1K 1% 1/4W	
R52	1-249-417-11	CARBON 1K 5% 1/4W		R219	1-249-405-11	CARBON 100 5% 1/4W	
R53	1-249-417-11	CARBON 1K 5% 1/4W		R220	1-249-405-11	CARBON 100 5% 1/4W	
R54	1-249-431-11	CARBON 15K 5% 1/4W		R221	1-249-409-11	CARBON 220 5% 1/4W	
R55	1-249-437-11	CARBON 47K 5% 1/4W		R222	1-215-425-00	METAL 1.5K 1% 1/4W	
R56	1-249-431-11	CARBON 15K 5% 1/4W		R223	1-249-429-11	CARBON 10K 5% 1/4W	
R57	1-249-431-11	CARBON 15K 5% 1/4W		R224	1-249-429-11	CARBON 10K 5% 1/4W	
R58	1-249-439-11	CARBON 68K 5% 1/4W		R225	1-249-422-11	CARBON 2.7K 5% 1/4W	
R60	1-215-465-00	METAL 68K 1% 1/4W		R227	1-215-445-00	METAL 10K 1% 1/4W	
R61	1-215-445-00	METAL 10K 1% 1/4W		R228	1-215-445-00	METAL 10K 1% 1/4W	
R101	1-249-441-11	CARBON 100K 5% 1/4W		R236	1-215-477-00	METAL 220K 1% 1/4W	
R102	1-249-421-11	CARBON 2.2K 5% 1/4W		R237	1-249-417-11	CARBON 1K 5% 1/4W	
R104	1-215-469-00	METAL 100K 1% 1/4W		R238	1-249-441-11	CARBON 100K 5% 1/4W	
R105	1-215-476-00	METAL 200K 1% 1/4W		R240	1-249-429-11	CARBON 10K 5% 1/4W	
R106	1-215-427-00	METAL 1.8K 1% 1/4W		R241	1-215-469-00	METAL 100K 1% 1/4W	
R107	1-249-435-11	CARBON 33K 5% 1/4W		R242	1-215-459-00	METAL 39K 1% 1/4W	
R108	1-249-430-11	CARBON 12K 5% 1/4W		R243	1-215-488-00	METAL 620K 1% 1/4W	
R109	1-249-417-11	CARBON 1K 5% 1/4W		R244	1-249-434-11	CARBON 27K 5% 1/4W	
R110	1-249-441-11	CARBON 100K 5% 1/4W		R245	1-249-429-11	CARBON 10K 5% 1/4W	
R111	1-249-417-11	CARBON 1K 5% 1/4W		R246	1-249-429-11	CARBON 10K 5% 1/4W	
R113	1-247-903-91	CARBON 1M 5% 1/4W		R247	1-249-405-11	CARBON 100 5% 1/4W	
R114	1-249-419-11	CARBON 1.5K 5% 1/4W		R250	1-249-405-11	CARBON 100 5% 1/4W	
R115	1-249-419-11	CARBON 1.5K 5% 1/4W		R301	1-249-441-11	CARBON 100K 5% 1/4W	
R116	1-249-424-11	CARBON 3.9K 5% 1/4W		R302	1-249-421-11	CARBON 2.2K 5% 1/4W	
R117	1-249-419-11	CARBON 1.5K 5% 1/4W		R304	1-215-469-00	METAL 100K 1% 1/4W	
R118	1-215-421-00	METAL 1K 1% 1/4W		R305	1-215-476-00	METAL 200K 1% 1/4W	
R119	1-249-405-11	CARBON 100 5% 1/4W		R306	1-215-427-00	METAL 1.8K 1% 1/4W	
R120	1-249-405-11	CARBON 100 5% 1/4W		R307	1-249-435-11	CARBON 33K 5% 1/4W	
R121	1-249-409-11	CARBON 220 5% 1/4W		R308	1-249-430-11	CARBON 12K 5% 1/4W	
R122	1-215-425-00	METAL 1.5K 1% 1/4W		R309	1-249-417-11	CARBON 1K 5% 1/4W	
				R310	1-249-441-11	CARBON 100K 5% 1/4W	

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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R311	1-249-417-11	CARBON	1K 5% 1/4W	C35	1-130-471-00	MYLAR	0.001MF 5% 50V
R313	1-247-903-91	CARBON	1M 5% 1/4W	C36	1-102-824-00	CERAMIC	470PF 5% 50V
R314	1-249-419-11	CARBON	1.5K 5% 1/4W	C37	1-124-903-11	ELECT	1MF 20% 50V
R315	1-249-419-11	CARBON	1.5K 5% 1/4W	C38	1-101-004-00	CERAMIC	0.01MF 50V
R316	1-249-424-11	CARBON	3.9K 5% 1/4W	C39	1-101-004-00	CERAMIC	0.01MF 50V
R317	1-249-419-11	CARBON	1.5K 5% 1/4W	C40	1-102-074-00	CERAMIC	0.001MF 10% 50V
R318	1-215-421-00	METAL	1K 1% 1/4W	C61	1-101-888-00	CERAMIC	68PF 5% 50V
R319	1-249-405-11	CARBON	100 5% 1/4W	C62	1-101-880-00	CERAMIC	47PF 5% 50V
R320	1-249-405-11	CARBON	100 5% 1/4W	C63	1-101-888-00	CERAMIC	68PF 5% 50V
R321	1-249-409-11	CARBON	220 5% 1/4W	C64	1-101-880-00	CERAMIC	47PF 5% 50V
R322	1-215-425-00	METAL	1.5K 1% 1/4W	C65	1-102-820-00	CERAMIC	330PF 5% 50V
R323	1-249-429-11	CARBON	10K 5% 1/4W	C66	1-101-004-00	CERAMIC	0.01MF 50V
R324	1-249-429-11	CARBON	10K 5% 1/4W	C67	1-101-880-00	CERAMIC	47PF 5% 50V
R325	1-249-422-11	CARBON	2.7K 5% 1/4W	C100	1-124-910-11	ELECT	47MF 20% 16V
R327	1-215-445-00	METAL	10K 1% 1/4W	C102	1-124-034-51	ELECT	33MF 20% 16V
R328	1-215-445-00	METAL	10K 1% 1/4W	C106	1-101-004-00	CERAMIC	0.01MF 50V
R336	1-215-477-00	METAL	220K 1% 1/4W	C108	1-124-034-51	ELECT	33MF 20% 16V
R337	1-249-417-11	CARBON	1K 5% 1/4W	C109	1-101-004-00	CERAMIC	0.01MF 50V
R338	1-249-441-11	CARBON	100K 5% 1/4W	C110	1-101-004-00	CERAMIC	0.01MF 50V
R340	1-249-429-11	CARBON	10K 5% 1/4W	C111	1-101-004-00	CERAMIC	0.01MF 50V
R341	1-215-469-00	METAL	100K 1% 1/4W	C112	1-101-004-00	CERAMIC	0.01MF 50V
R342	1-215-459-00	METAL	39K 1% 1/4W	C113	1-101-004-00	CERAMIC	0.01MF 50V
R343	1-215-488-00	METAL	620K 1% 1/4W	C114	1-126-966-11	ELECT	10MF 20% 16V
R344	1-249-434-11	CARBON	27K 5% 1/4W	C115	1-101-004-00	CERAMIC	0.01MF 50V
R345	1-249-429-11	CARBON	10K 5% 1/4W	C116	1-101-004-00	CERAMIC	0.01MF 50V
R346	1-249-429-11	CARBON	10K 5% 1/4W	C117	1-101-004-00	CERAMIC	0.01MF 50V
R347	1-249-405-11	CARBON	100 5% 1/4W	C118	1-126-966-11	ELECT	10MF 20% 16V
R350	1-249-405-11	CARBON	100 5% 1/4W	C120	1-101-004-00	CERAMIC	0.01MF 50V
				C121	1-101-004-00	CERAMIC	0.01MF 50V
				C122	1-101-004-00	CERAMIC	0.01MF 50V
				C130	1-124-034-51	ELECT	33MF 20% 16V

*A-1135-361-A BJ BOARD, COMPLETE							

*4-353-708-00 HOOK, FINGER							
7-685-871-01 SCREW +BVT 3X6 (S)							
<CAPACITOR>				<COMPOSITION CIRCUIT BLOCK>			
C1	1-101-361-00	CERAMIC	150PF 5% 50V	CP1	1-232-738-11	COMPOSITION CIRCUIT BLOCK	
C2	1-101-361-00	CERAMIC	150PF 5% 50V	CP2	1-232-738-11	COMPOSITION CIRCUIT BLOCK	
C4	1-102-821-00	CERAMIC	360PF 5% 50V	CP3	1-232-738-11	COMPOSITION CIRCUIT BLOCK	
C5	1-130-473-00	MYLAR	0.0015MF 5% 50V	CP4	1-232-738-11	COMPOSITION CIRCUIT BLOCK	
C11	1-104-302-11	POLYSTYRENE	0.001MF 5% 50V	CP5	1-232-738-11	COMPOSITION CIRCUIT BLOCK	
C12	1-102-525-11	CERAMIC	68PF 5% 50V	<DIODE>			
C14	1-102-525-11	CERAMIC	68PF 5% 50V	D1	8-719-911-19	DIODE 1SS119	
C15	1-102-525-11	CERAMIC	68PF 5% 50V	D2	8-719-911-19	DIODE 1SS119	
C16	1-102-525-11	CERAMIC	68PF 5% 50V	D3	8-719-911-19	DIODE 1SS119	
C17	1-102-525-11	CERAMIC	68PF 5% 50V	D7	8-719-911-19	DIODE 1SS119	
C18	1-104-302-11	POLYSTYRENE	0.001MF 5% 50V	D8	8-719-911-19	DIODE 1SS119	
C19	1-102-973-00	CERAMIC	100PF 5% 50V	D9	8-719-911-19	DIODE 1SS119	
C20	1-102-525-11	CERAMIC	68PF 5% 50V	D11	8-719-016-42	DIODE MC932	
C21	1-101-361-00	CERAMIC	150PF 5% 50V	<IC>			
C22	1-101-890-00	CERAMIC	75PF 5% 50V	IC1	8-759-345-38	IC HD14538BP	
C23	1-102-965-00	CERAMIC	39PF 5% 50V	IC2	8-759-040-01	IC NC14001BCP	
C25	1-102-946-00	CERAMIC	9PF 1PF 50V	IC3	8-759-240-40	IC TC4040BP	
C26	1-102-944-00	CERAMIC	7PF 1PF 50V	IC4	8-759-240-40	IC TC4040BP	
C27	1-101-361-00	CERAMIC	150PF 5% 50V	IC5	8-759-000-35	IC NC14027BCP	
C28	1-130-471-00	MYLAR	0.001MF 5% 50V	IC6	8-759-000-35	IC NC14027BCP	
C29	1-130-471-00	MYLAR	0.001MF 5% 50V	IC7	8-759-000-35	IC NC14027BCP	
C30	1-101-004-00	CERAMIC	0.01MF 50V	IC8	8-759-000-35	IC NC14027BCP	
C31	1-101-361-00	CERAMIC	150PF 5% 50V	IC9	8-759-000-35	IC NC14027BCP	
C32	1-101-361-00	CERAMIC	150PF 5% 50V	IC10	8-759-345-38	IC HD14538BP	
C33	1-101-361-00	CERAMIC	150PF 5% 50V	IC11	8-759-345-38	IC HD14538BP	
C34	1-101-361-00	CERAMIC	150PF 5% 50V	IC12	8-759-345-38	IC HD14538BP	

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
IC13	8-759-040-01	IC MC14001BCP		R56	1-249-434-11	CARBON 27K 5% 1/4W	
IC14	8-759-040-01	IC MC14001BCP		R57	1-249-422-11	CARBON 2.7K 5% 1/4W	
IC15	8-759-240-71	IC TC4071BP		R58	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC16	8-759-140-11	IC UPD4011BC		R59	1-247-836-11	CARBON 1.6K 5% 1/4W	
IC17	8-759-140-11	IC UPD4011BC		R60	1-249-427-11	CARBON 6.8K 5% 1/4W	
IC18	8-759-000-32	IC MC14023BCP		R61	1-215-449-00	METAL 15K 1% 1/4W	
IC19	8-759-240-81	IC TC4081BP		R62	1-249-433-11	CARBON 22K 5% 1/4W	
IC20	8-759-240-81	IC TC4081BP		R63	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC21	8-759-240-71	IC TC4071BP		R64	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC22	8-759-240-71	IC TC4071BP		R65	1-249-417-11	CARBON 1K 5% 1/4W	
IC23	8-759-040-73	IC TC4073BP		R66	1-249-430-11	CARBON 12K 5% 1/4W	
IC24	8-759-240-69	IC TC4069UBP		R67	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC25	8-759-240-69	IC TC4069UBP		R68	1-249-433-11	CARBON 22K 5% 1/4W	
IC26	8-759-041-75	IC MC14175BCP		R69	1-249-425-11	CARBON 4.7K 5% 1/4W	
IC27	8-759-140-53	IC UPD4053BC		R70	1-249-417-11	CARBON 1K 5% 1/4W	
IC28	8-759-208-04	IC TC4520BPHB		R71	1-249-430-11	CARBON 12K 5% 1/4W	
IC29	8-759-345-38	IC HD14538BP		R72	1-249-433-11	CARBON 22K 5% 1/4W	
				R74	1-249-430-11	CARBON 12K 5% 1/4W	
<COIL>				R75	1-249-422-11	CARBON 2.7K 5% 1/4W	
L1	1-408-098-00	INDUCTOR 560UH		R76	1-215-463-00	METAL 56K 1% 1/4W	
L2	1-408-098-00	INDUCTOR 560UH		R77	1-215-475-00	METAL 180K 1% 1/4W	
L3	1-408-100-00	INDUCTOR 680UH		R78	1-215-439-00	METAL 5.6K 1% 1/4W	
				R79	1-249-425-11	CARBON 4.7K 5% 1/4W	
<TRANSISTOR>				R80	1-249-433-11	CARBON 22K 5% 1/4W	
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE		R81	1-249-425-11	CARBON 4.7K 5% 1/4W	
Q15	8-729-119-78	TRANSISTOR 2SC2785-HFE		R82	1-249-415-11	CARBON 680 5% 1/4W	
Q16	8-729-119-78	TRANSISTOR 2SC2785-HFE		R83	1-249-417-11	CARBON 1K 5% 1/4W	
Q17	8-729-119-78	TRANSISTOR 2SC2785-HFE		R85	1-249-430-11	CARBON 12K 5% 1/4W	
Q18	8-729-119-78	TRANSISTOR 2SC2785-HFE		R87	1-249-422-11	CARBON 2.7K 5% 1/4W	
Q19	8-729-119-76	TRANSISTOR 2SA1175-HFE		R89	1-247-887-00	CARBON 220K 5% 1/4W	
Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE		R90	1-249-441-11	CARBON 100K 5% 1/4W	
Q21	8-729-119-78	TRANSISTOR 2SC2785-HFE		R91	1-249-441-11	CARBON 100K 5% 1/4W	
Q22	8-729-119-78	TRANSISTOR 2SC2785-HFE		R92	1-249-441-11	CARBON 100K 5% 1/4W	
Q23	8-729-119-76	TRANSISTOR 2SA1175-HFE		R93	1-249-429-11	CARBON 10K 5% 1/4W	
Q24	8-729-119-78	TRANSISTOR 2SC2785-HFE		R94	1-249-429-11	CARBON 10K 5% 1/4W	
Q25	8-729-119-78	TRANSISTOR 2SC2785-HFE		R95	1-249-441-11	CARBON 100K 5% 1/4W	
Q26	8-729-119-78	TRANSISTOR 2SC2785-HFE		R96	1-249-417-11	CARBON 1K 5% 1/4W	
				R100	1-249-423-11	CARBON 3.3K 5% 1/4W	
<RESISTOR>				R111	1-249-427-11	CARBON 6.8K 5% 1/4W	
R2	1-215-439-00	METAL 5.6K 1% 1/4W		R112	1-249-429-11	CARBON 10K 5% 1/4W	
R3	1-249-422-11	CARBON 2.7K 5% 1/4W		R113	1-249-429-11	CARBON 10K 5% 1/4W	
R4	1-215-449-00	METAL 15K 1% 1/4W		R114	1-249-422-11	CARBON 2.7K 5% 1/4W	
R5	1-249-441-11	CARBON 100K 5% 1/4W		R115	1-249-419-11	CARBON 1.5K 5% 1/4W	
R6	1-249-425-11	CARBON 4.7K 5% 1/4W		R116	1-249-427-11	CARBON 6.8K 5% 1/4W	
R7	1-215-439-00	METAL 5.6K 1% 1/4W		R117	1-249-429-11	CARBON 10K 5% 1/4W	
R37	1-249-441-11	CARBON 100K 5% 1/4W		R118	1-249-429-11	CARBON 10K 5% 1/4W	
R38	1-215-454-00	METAL 24K 1% 1/4W		R119	1-249-422-11	CARBON 2.7K 5% 1/4W	
R39	1-249-422-11	CARBON 2.7K 5% 1/4W		R120	1-249-419-11	CARBON 1.5K 5% 1/4W	
R42	1-249-433-11	CARBON 22K 5% 1/4W		R121	1-249-417-11	CARBON 1K 5% 1/4W	
R43	1-247-876-11	CARBON 75K 5% 1/4W		R122	1-249-417-11	CARBON 1K 5% 1/4W	
R44	1-249-429-11	CARBON 10K 5% 1/4W		R123	1-249-413-11	CARBON 470 5% 1/4W	
R45	1-249-441-11	CARBON 100K 5% 1/4W		R124	1-249-417-11	CARBON 1K 5% 1/4W	
R46	1-249-441-11	CARBON 100K 5% 1/4W		R125	1-249-417-11	CARBON 1K 5% 1/4W	
R47	1-247-862-11	CARBON 20K 5% 1/4W		R126	1-249-417-11	CARBON 1K 5% 1/4W	
R48	1-215-467-00	METAL 82K 1% 1/4W		R127	1-249-417-11	CARBON 1K 5% 1/4W	
R49	1-249-422-11	CARBON 2.7K 5% 1/4W		R128	1-249-417-11	CARBON 1K 5% 1/4W	
R50	1-215-469-00	METAL 100K 1% 1/4W		R129	1-249-417-11	CARBON 1K 5% 1/4W	
R51	1-215-445-00	METAL 10K 1% 1/4W		<VARIABLE RESISTOR>			
R52	1-247-885-00	CARBON 180K 5% 1/4W		RV1	1-237-504-21	RES. ADJ. CERMET 20K	
R53	1-215-449-00	METAL 15K 1% 1/4W		RV3	1-237-504-21	RES. ADJ. CERMET 20K	
R54	1-249-422-11	CARBON 2.7K 5% 1/4W		RV4	1-237-503-21	RES. ADJ. CERMET 10K	
				RV5	1-237-506-21	RES. ADJ. CERMET 100K	



BJ

BK

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
RV6	1-237-505-21	RES, ADJ, CERMET 50K		C211	1-124-482-11	ELECT 33MF	20% 25V
RV7	1-237-504-21	RES, ADJ, CERMET 20K		C212	1-101-004-00	CERAMIC 0.01MF	50V
RV8	1-237-504-21	RES, ADJ, CERMET 20K		C213	1-124-482-11	ELECT 33MF	20% 25V
RV9	1-237-505-21	RES, ADJ, CERMET 50K		C214	1-102-050-00	CERAMIC 0.01MF	99% 500V
<SWITCH>				C215	1-123-939-00	ELECT 10MF	20% 200V
S1	1-570-857-11	SWITCH, SLIDE		C301	1-102-525-11	CERAMIC 68PF	5% 50V
*****				C302	1-102-973-00	CERAMIC 100PF	5% 50V
*A-1135-523-A	BK BOARD, COMPLETE			C303	1-124-341-00	ELECT 1MF	20% 200V
*****				C306	1-102-038-00	CERAMIC 0.001MF	500V
*4-353-770-00	HEAT SINK (TYPE 220)			C307	1-102-038-00	CERAMIC 0.001MF	500V
7-682-948-01	SCREW +PSW 3X8			C309	1-124-478-11	ELECT 100MF	20% 25V
7-682-548-04	SCREW +BVTT 3X8 (S)			C310	1-101-004-00	CERAMIC 0.01MF	50V
<CONNECTOR>				C311	1-124-482-11	ELECT 33MF	20% 25V
BK1	*1-566-056-11	PIN, CONNECTOR 4P		C312	1-101-004-00	CERAMIC 0.01MF	50V
BK2	*1-566-056-11	PIN, CONNECTOR 4P		C313	1-124-482-11	ELECT 33MF	20% 25V
BK3	*1-566-056-11	PIN, CONNECTOR 4P		C314	1-102-050-00	CERAMIC 0.01MF	99% 500V
BK4	*1-566-055-11	PIN, CONNECTOR 3P		C315	1-123-939-00	ELECT 10MF	20% 200V
BK5	*1-566-057-11	PIN, CONNECTOR 5P		C316	1-102-038-00	CERAMIC 0.001MF	500V
BK6	*1-566-043-11	PIN, CONNECTOR 4P		<TRIMMER>			
BK7	*1-566-043-11	PIN, CONNECTOR 4P		CV101	1-141-171-00	CAP, TRIMMER 15P	
BK8	*1-566-043-11	PIN, CONNECTOR 4P		CV201	1-141-171-00	CAP, TRIMMER 15P	
BK9	*1-566-054-11	PIN, CONNECTOR 2P		CV301	1-141-171-00	CAP, TRIMMER 15P	
BK10	*1-566-054-11	PIN, CONNECTOR 2P		<DIODE>			
BK11	*1-566-054-11	PIN, CONNECTOR 2P		D1	8-719-911-19	DIODE 1SS119	
BK12	*1-566-056-11	PIN, CONNECTOR 4P		D2	8-719-911-19	DIODE 1SS119	
BK13	*1-566-054-11	PIN, CONNECTOR 2P		D12	8-719-901-83	DIODE 1SS83	
<CAPACITOR>				D13	8-719-901-83	DIODE 1SS83	
C1	1-124-482-11	ELECT 33MF	20% 25V	D14	8-719-901-83	DIODE 1SS83	
C5	1-124-482-11	ELECT 33MF	20% 25V	D15	8-719-110-53	DIODE RD20ESB2	
C6	1-101-004-00	CERAMIC 0.01MF	50V	D20	8-719-911-19	DIODE 1SS119	
C11	1-124-482-11	ELECT 33MF	20% 25V	D21	8-719-911-19	DIODE 1SS119	
C12	1-101-001-00	CERAMIC 0.001MF	50V	D22	8-719-911-19	DIODE 1SS119	
C15	1-123-939-00	ELECT 10MF	20% 200V	D23	8-719-911-19	DIODE 1SS119	
C16	1-102-050-00	CERAMIC 0.01MF	99% 500V	D30	8-719-911-19	DIODE 1SS119	
C20	1-124-482-11	ELECT 33MF	20% 25V	D101	8-719-901-83	DIODE 1SS83	
C21	1-123-939-00	ELECT 10MF	20% 200V	D102	8-719-901-83	DIODE 1SS83	
C25	1-108-704-11	MYLAR 0.1MF	10% 200V	D103	8-719-911-19	DIODE 1SS119	
C31	1-136-153-00	FILM 0.01MF	5% 50V	D104	8-719-911-19	DIODE 1SS119	
C101	1-102-525-11	CERAMIC 68PF	5% 50V	D105	8-719-911-19	DIODE 1SS119	
C102	1-102-973-00	CERAMIC 100PF	5% 50V	D201	8-719-901-83	DIODE 1SS83	
C103	1-124-341-00	ELECT 1MF	20% 200V	D202	8-719-901-83	DIODE 1SS83	
C106	1-102-038-00	CERAMIC 0.001MF	500V	D203	8-719-911-19	DIODE 1SS119	
C107	1-102-038-00	CERAMIC 0.001MF	500V	D204	8-719-911-19	DIODE 1SS119	
C109	1-124-478-11	ELECT 100MF	20% 25V	D205	8-719-911-19	DIODE 1SS119	
C110	1-101-004-00	CERAMIC 0.01MF	50V	D301	8-719-901-83	DIODE 1SS83	
C111	1-124-482-11	ELECT 33MF	20% 25V	D302	8-719-901-83	DIODE 1SS83	
C112	1-101-004-00	CERAMIC 0.01MF	50V	D303	8-719-911-19	DIODE 1SS119	
C113	1-124-482-11	ELECT 33MF	20% 25V	D304	8-719-911-19	DIODE 1SS119	
C114	1-102-050-00	CERAMIC 0.01MF	99% 500V	D305	8-719-911-19	DIODE 1SS119	
C115	1-123-939-00	ELECT 10MF	20% 200V	<IC>			
C201	1-102-525-11	CERAMIC 68PF	5% 50V	IC1	8-759-145-58	IC UPC4558C	
C202	1-102-973-00	CERAMIC 100PF	5% 50V	<COIL>			
C203	1-124-341-00	ELECT 1MF	20% 200V	L101	1-408-413-00	INDUCTOR 22UH	
C206	1-102-038-00	CERAMIC 0.001MF	500V	L201	1-408-413-00	INDUCTOR 22UH	
C207	1-102-038-00	CERAMIC 0.001MF	500V	L301	1-408-413-00	INDUCTOR 22UH	
C209	1-124-478-11	ELECT 100MF	20% 25V				
C210	1-101-004-00	CERAMIC 0.01MF	50V				

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
<TRANSISTOR>				R20	1-216-461-00	METAL OXIDE	5.6K 5% 2W F
Q1	8-729-119-76	TRANSISTOR 2SA1175-HFE		R21	1-215-471-00	METAL	120K 1% 1/4W
Q2	8-729-119-76	TRANSISTOR 2SA1175-HFE		R22	1-215-470-00	METAL	110K 1% 1/4W
Q10	8-729-119-78	TRANSISTOR 2SC2785-HFE		R23	1-215-445-00	METAL	10K 1% 1/4W
Q11	8-729-200-17	TRANSISTOR 2SA1091-0		R24	1-215-439-00	METAL	5.6K 1% 1/4W
Q12	8-729-255-12	TRANSISTOR 2SC2551-0		R25	1-215-445-00	METAL	10K 1% 1/4W
Q20	8-729-119-80	TRANSISTOR 2SC2688-LK		R26	1-215-445-00	METAL	10K 1% 1/4W
Q21	8-729-800-10	TRANSISTOR 2SC3068		R27	1-216-461-00	METAL OXIDE	5.6K 5% 2W F
Q22	8-729-119-80	TRANSISTOR 2SC2688-LK		R31	1-247-874-11	CARBON	62K 5% 1/4W
Q23	8-729-306-92	TRANSISTOR 2SD669A-C		R32	1-249-440-11	CARBON	82K 5% 1/4W
Q23H	*4-363-146-00	HEAT SINK, V.OUT		R33	1-249-430-11	CARBON	12K 5% 1/4W
Q23S	4-370-970-01	SPACER, TR		R34	1-249-429-11	CARBON	10K 5% 1/4W
Q30	8-729-119-80	TRANSISTOR 2SC2688-LK		R35	1-249-417-11	CARBON	1K 5% 1/4W
Q101	8-729-119-78	TRANSISTOR 2SC2785-HFE		R37	1-249-415-11	CARBON	680 5% 1/4W
Q102	8-729-119-76	TRANSISTOR 2SA1175-HFE		R38	1-249-441-11	CARBON	100K 5% 1/4W
Q103	8-729-384-48	TRANSISTOR 2SA844-E		R100	1-249-405-11	CARBON	100 5% 1/4W
Q104	8-729-200-17	TRANSISTOR 2SA1091-0		R101	1-215-409-00	METAL	330 1% 1/4W
Q105	8-729-822-47	TRANSISTOR 2SC3956-E		R102	1-249-419-11	CARBON	1.5K 5% 1/4W
Q105H	*4-363-146-00	HEAT SINK, V.OUT		R103	1-215-435-00	METAL	3.9K 1% 1/4W
Q105S	4-370-970-01	SPACER, TR		R104	1-249-422-11	CARBON	2.7K 5% 1/4W
Q106	8-729-802-71	TRANSISTOR 2SA1407-D		R105	1-249-405-11	CARBON	100 5% 1/4W
Q106S	4-370-970-01	SPACER, TR		R106	1-215-412-00	METAL	430 1% 1/4W
Q107	8-729-802-71	TRANSISTOR 2SA1407-D		R107	1-215-467-00	METAL	82K 1% 1/4W
Q107S	4-370-970-01	SPACER, TR		R108	1-215-467-00	METAL	82K 1% 1/4W
Q201	8-729-119-78	TRANSISTOR 2SC2785-HFE		R109	1-216-457-00	METAL OXIDE	1.2K 5% 2W F
Q202	8-729-119-76	TRANSISTOR 2SA1175-HFE		R110	1-216-457-00	METAL OXIDE	1.2K 5% 2W F
Q203	8-729-384-48	TRANSISTOR 2SA844-E		R111	1-216-457-00	METAL OXIDE	1.2K 5% 2W F
Q204	8-729-200-17	TRANSISTOR 2SA1091-0		R112	1-216-457-00	METAL OXIDE	1.2K 5% 2W F
Q205	8-729-822-47	TRANSISTOR 2SC3956-E		R113	1-249-405-11	CARBON	100 5% 1/4W
Q205H	*4-363-146-00	HEAT SINK, V.OUT		R114	1-215-401-11	METAL	150 1% 1/4W
Q205S	4-370-970-01	SPACER, TR		R115	1-215-865-11	METAL OXIDE	220 5% 1W F
Q206	8-729-802-71	TRANSISTOR 2SA1407-D		R116	1-215-439-00	METAL	5.6K 1% 1/4W
Q206S	4-370-970-01	SPACER, TR		R117	1-215-481-00	METAL	330K 1% 1/4W
Q207	8-729-802-71	TRANSISTOR 2SA1407-D		R119	1-249-431-11	CARBON	15K 5% 1/4W
Q207S	4-370-970-01	SPACER, TR		R120	1-249-405-11	CARBON	100 5% 1/4W
Q301	8-729-119-78	TRANSISTOR 2SC2785-HFE		R124	1-249-423-11	CARBON	3.3K 5% 1/4W
Q302	8-729-119-76	TRANSISTOR 2SA1175-HFE		R125	1-247-834-11	CARBON	1.3K 5% 1/4W
Q303	8-729-384-48	TRANSISTOR 2SA844-E		R126	1-249-429-11	CARBON	10K 5% 1/4W
Q304	8-729-200-17	TRANSISTOR 2SA1091-0		R127	1-249-417-11	CARBON	1K 5% 1/4W
Q305	8-729-822-47	TRANSISTOR 2SC3956-E		R130	1-249-405-11	CARBON	100 5% 1/4W
Q305H	*4-363-146-00	HEAT SINK, V.OUT		R200	1-249-405-11	CARBON	100 5% 1/4W
Q305S	4-370-970-01	SPACER, TR		R201	1-215-409-00	METAL	330 1% 1/4W
Q306	8-729-802-71	TRANSISTOR 2SA1407-D		R202	1-249-419-11	CARBON	1.5K 5% 1/4W
Q306S	4-370-970-01	SPACER, TR		R203	1-215-435-00	METAL	3.9K 1% 1/4W
Q307	8-729-802-71	TRANSISTOR 2SA1407-D		R204	1-249-422-11	CARBON	2.7K 5% 1/4W
Q307S	4-370-970-01	SPACER, TR		R205	1-249-405-11	CARBON	100 5% 1/4W
<RESISTOR>				R206	1-215-412-00	METAL	430 1% 1/4W
R1	1-249-431-11	CARBON	15K 5% 1/4W	R207	1-215-467-00	METAL	82K 1% 1/4W
R2	1-249-435-11	CARBON	33K 5% 1/4W	R208	1-215-467-00	METAL	82K 1% 1/4W
R3	1-249-422-11	CARBON	2.7K 5% 1/4W	R209	1-216-457-00	METAL OXIDE	1.2K 5% 2W F
R4	1-249-419-11	CARBON	1.5K 5% 1/4W	R210	1-216-457-00	METAL OXIDE	1.2K 5% 2W F
R5	1-249-431-11	CARBON	15K 5% 1/4W	R211	1-216-457-00	METAL OXIDE	1.2K 5% 2W F
R6	1-249-425-11	CARBON	4.7K 5% 1/4W	R212	1-216-457-00	METAL OXIDE	1.2K 5% 2W F
R10	1-249-417-11	CARBON	1K 5% 1/4W	R213	1-249-405-11	CARBON	100 5% 1/4W
R11	1-249-431-11	CARBON	15K 5% 1/4W	R214	1-215-401-11	METAL	150 1% 1/4W
R12	1-249-437-11	CARBON	47K 5% 1/4W	R215	1-215-865-11	METAL OXIDE	220 5% 1W F
R13	1-249-423-11	CARBON	3.3K 5% 1/4W	R216	1-215-439-00	METAL	5.6K 1% 1/4W
R14	1-249-431-11	CARBON	15K 5% 1/4W	R217	1-215-481-00	METAL	330K 1% 1/4W
R16	1-215-901-00	METAL OXIDE	33K 5% 2W F	R219	1-249-431-11	CARBON	15K 5% 1/4W
R17	1-215-901-00	METAL OXIDE	33K 5% 2W F	R220	1-249-405-11	CARBON	100 5% 1/4W
				R224	1-249-423-11	CARBON	3.3K 5% 1/4W
				R225	1-247-834-11	CARBON	1.3K 5% 1/4W
				R226	1-249-429-11	CARBON	10K 5% 1/4W

BK

BT

REF.NO.	PART NO.	DESCRIPTION			REMARK	REF.NO.	PART NO.	DESCRIPTION			REMARK
R227	1-249-417-11	CARBON	1K	5%	1/4W	C38	1-163-222-11	CERAMIC CHIP 5PF	0.25PF	50V	
R230	1-249-405-11	CARBON	100	5%	1/4W	C40	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
R300	1-249-405-11	CARBON	100	5%	1/4W	C42	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
R301	1-215-409-00	METAL	330	1%	1/4W	C43	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
R302	1-249-419-11	CARBON	1.5K	5%	1/4W						
R303	1-215-435-00	METAL	3.9K	1%	1/4W	C44	1-163-113-00	CERAMIC CHIP 68PF	5%	50V	
R304	1-249-422-11	CARBON	2.7K	5%	1/4W	C45	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
R305	1-249-405-11	CARBON	100	5%	1/4W	C47	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
R306	1-215-412-00	METAL	430	1%	1/4W	C48	1-124-907-11	ELECT 10MF	20%	50V	
R307	1-215-467-00	METAL	82K	1%	1/4W	C49	1-163-097-00	CERAMIC CHIP 15PF	5%	50V	
R308	1-215-467-00	METAL	82K	1%	1/4W	C50	1-124-907-11	ELECT 10MF	20%	50V	
R309	1-216-457-00	METAL OXIDE	1.2K	5%	2W	C51	1-123-875-11	ELECT 10MF	20%	50V	
R310	1-216-457-00	METAL OXIDE	1.2K	5%	2W	C52	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
R311	1-216-457-00	METAL OXIDE	1.2K	5%	2W	C53	1-123-875-11	ELECT 10MF	20%	50V	
R312	1-216-457-00	METAL OXIDE	1.2K	5%	2W	C54	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
R313	1-249-405-11	CARBON	100	5%	1/4W	C55	1-123-875-11	ELECT 10MF	20%	50V	
R314	1-215-401-11	METAL	150	1%	1/4W	C56	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
R315	1-215-865-11	METAL OXIDE	220	5%	1W	C60	1-124-478-11	ELECT 100MF	20%	25V	
R316	1-215-439-00	METAL	5.6K	1%	1/4W	C61	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
R317	1-215-481-00	METAL	330K	1%	1/4W	C62	1-124-907-11	ELECT 10MF	20%	50V	
R319	1-249-431-11	CARBON	15K	5%	1/4W	C63	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
R320	1-249-405-11	CARBON	100	5%	1/4W	C64	1-124-477-11	ELECT 47MF	20%	16V	
R324	1-249-423-11	CARBON	3.3K	5%	1/4W	C65	1-124-907-11	ELECT 10MF	20%	50V	
R325	1-247-834-11	CARBON	1.3K	5%	1/4W	C66	1-124-907-11	ELECT 10MF	20%	50V	
R326	1-249-429-11	CARBON	10K	5%	1/4W	C67	1-124-907-11	ELECT 10MF	20%	50V	
R327	1-249-417-11	CARBON	1K	5%	1/4W	C68	1-124-907-11	ELECT 10MF	20%	50V	
R330	1-249-405-11	CARBON	100	5%	1/4W	C69	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
<VARIABLE RESISTOR>						C70	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
RV101	1-237-515-21	RES. ADJ. CERMET 1K				C71	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
RV201	1-237-515-21	RES. ADJ. CERMET 1K				C72	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
RV301	1-237-515-21	RES. ADJ. CERMET 1K				C73	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
*****						C74	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
*A-1135-606-B		BT BOARD, COMPLETE (BVM-1916 ONLY)				C75	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
		*****				C80	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
*4-353-708-00		HOOK, FINGER				C81	1-123-875-11	ELECT 10MF	20%	50V	
7-685-871-01		SCREW +BVT 3X6 (S)				C82	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
<CAPACITOR>						C83	1-123-875-11	ELECT 10MF	20%	50V	
C1	1-124-477-11	ELECT 47MF		20%	16V	C84	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C3	1-124-477-11	ELECT 47MF		20%	16V	C85	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C4	1-124-477-11	ELECT 47MF		20%	16V	C86	1-123-875-11	ELECT 10MF	20%	50V	
C5	1-163-038-00	CERAMIC CHIP 0.1MF			25V	C87	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C6	1-124-477-11	ELECT 47MF		20%	16V	C88	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C9	1-163-369-11	CERAMIC CHIP 47PF		5%	50V	C89	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C10	1-163-038-00	CERAMIC CHIP 0.1MF			25V	C90	1-124-907-11	ELECT 10MF	20%	50V	
C14	1-163-101-00	CERAMIC CHIP 22PF		5%	50V	C100	1-124-478-11	ELECT 100MF	20%	25V	
C15	1-163-038-00	CERAMIC CHIP 0.1MF			25V	C101	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C16	1-163-227-11	CERAMIC CHIP 10PF		0.5PF	50V	C102	1-124-907-11	ELECT 10MF	20%	50V	
C17	1-163-093-00	CERAMIC CHIP 10PF		5%	50V	C103	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C18	1-163-038-00	CERAMIC CHIP 0.1MF			25V	C104	1-124-477-11	ELECT 47MF	20%	16V	
C19	1-163-038-00	CERAMIC CHIP 0.1MF			25V	C105	1-124-907-11	ELECT 10MF	20%	50V	
C20	1-163-038-00	CERAMIC CHIP 0.1MF			25V	C106	1-124-907-11	ELECT 10MF	20%	50V	
C21	1-163-038-00	CERAMIC CHIP 0.1MF			25V	C107	1-124-907-11	ELECT 10MF	20%	50V	
C22	1-163-099-00	CERAMIC CHIP 18PF		5%	50V	C108	1-124-907-11	ELECT 10MF	20%	50V	
C23	1-163-097-00	CERAMIC CHIP 15PF		5%	50V	C109	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C30	1-163-251-11	CERAMIC CHIP 100PF		5%	50V	C110	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C32	1-163-235-11	CERAMIC CHIP 22PF		5%	50V	C111	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C34	1-163-099-00	CERAMIC CHIP 18PF		5%	50V	C112	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
C37	1-163-235-11	CERAMIC CHIP 22PF		5%	50V	C113	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
						C114	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
						C115	1-163-038-00	CERAMIC CHIP 0.1MF		25V	
						C116	1-163-038-00	CERAMIC CHIP 0.1MF		25V	

7. ELECTRICAL PARTS LIST

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BT

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
L14	1-410-204-41	INDUCTOR CHIP 10UH					
L15	1-410-216-31	INDUCTOR CHIP 100UH					
		<TRANSISTOR>				<RESISTOR>	
Q1	8-729-216-22	TRANSISTOR 2SA1162-G		JW1	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q2	8-729-120-28	TRANSISTOR 2SC1623-L5L6		JW2	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q3	8-729-122-63	TRANSISTOR 2SA1226-E4		JW3	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q4	8-729-175-72	TRANSISTOR 2SC2757-T33		JW5	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q5	8-729-120-28	TRANSISTOR 2SC1623-L5L6		JW11	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q6	8-729-120-28	TRANSISTOR 2SC1623-L5L6		JW12	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q7	8-729-122-63	TRANSISTOR 2SA1226-E4		JW13	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q8	8-729-216-22	TRANSISTOR 2SA1162-G		JW14	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q9	8-729-122-63	TRANSISTOR 2SA1226-E4		JW15	1-216-295-00	METAL GLAZE 0 5% 1/10W	
Q10	8-729-175-72	TRANSISTOR 2SC2757-T33		R1	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q11	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R2	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q12	8-729-122-63	TRANSISTOR 2SA1226-E4		R3	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
Q13	8-729-175-72	TRANSISTOR 2SC2757-T33		R4	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q14	8-729-175-72	TRANSISTOR 2SC2757-T33		R5	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
Q15	8-729-216-22	TRANSISTOR 2SA1162-G		R6	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q16	8-729-107-46	TRANSISTOR 2SC3624A-L15		R7	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
Q17	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R8	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
Q18	8-729-216-22	TRANSISTOR 2SA1162-G		R9	1-216-661-11	METAL CHIP 2.7K 0.50% 1/10W	
Q19	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R10	1-216-643-11	METAL CHIP 470 0.50% 1/10W	
Q20	8-729-175-72	TRANSISTOR 2SC2757-T33		R11	1-216-661-11	METAL CHIP 2.7K 0.50% 1/10W	
Q21	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R12	1-216-675-11	METAL CHIP 10K 0.50% 1/10W	
Q22	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R13	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
Q23	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R14	1-216-663-11	METAL CHIP 3.3K 0.50% 1/10W	
Q24	8-729-216-22	TRANSISTOR 2SA1162-G		R15	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q25	8-729-107-46	TRANSISTOR 2SC3624A-L15		R16	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q32	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R17	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
Q33	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R18	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q34	8-729-216-22	TRANSISTOR 2SA1162-G		R19	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q35	8-729-216-22	TRANSISTOR 2SA1162-G		R20	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q36	8-729-122-63	TRANSISTOR 2SA1226-E4		R21	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q37	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R22	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
Q38	8-729-122-63	TRANSISTOR 2SA1226-E4		R23	1-216-635-11	METAL CHIP 220 0.50% 1/10W	
Q39	8-729-175-72	TRANSISTOR 2SC2757-T33		R24	1-216-635-11	METAL CHIP 220 0.50% 1/10W	
Q40	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R25	1-216-075-00	METAL GLAZE 12K 5% 1/10W	
Q41	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R26	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
Q42	8-729-216-22	TRANSISTOR 2SA1162-G		R27	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
Q43	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R28	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q44	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R29	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q45	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R30	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
Q52	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R31	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q54	8-729-216-22	TRANSISTOR 2SA1162-G		R33	1-216-665-11	METAL CHIP 3.9K 0.50% 1/10W	
Q56	8-729-122-63	TRANSISTOR 2SA1226-E4		R34	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
Q57	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R35	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
Q58	8-729-122-63	TRANSISTOR 2SA1226-E4		R36	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q59	8-729-175-72	TRANSISTOR 2SC2757-T33		R37	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q60	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R38	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
Q61	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R39	1-216-635-11	METAL CHIP 220 0.50% 1/10W	
Q62	8-729-216-22	TRANSISTOR 2SA1162-G		R40	1-216-630-11	METAL CHIP 130 0.50% 1/10W	
Q65	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R41	1-216-630-11	METAL CHIP 130 0.50% 1/10W	
Q71	8-729-175-72	TRANSISTOR 2SC2757-T33		R42	1-216-635-11	METAL CHIP 220 0.50% 1/10W	
Q72	8-729-122-63	TRANSISTOR 2SA1226-E4		R43	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
Q73	8-729-175-72	TRANSISTOR 2SC2757-T33		R44	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
Q74	8-729-122-63	TRANSISTOR 2SA1226-E4		R45	1-216-651-11	METAL CHIP 1K 0.50% 1/10W	
Q81	8-729-901-06	TRANSISTOR DTA144EK		R46	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
Q82	8-729-901-01	TRANSISTOR DTC144EK		R47	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q83	8-729-901-06	TRANSISTOR DTA144EK		R48	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
Q84	8-729-901-06	TRANSISTOR DTA144EK		R49	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
Q85	8-729-140-97	TRANSISTOR 2SB734-34		R50	1-216-025-00	METAL GLAZE 100 5% 1/10W	
Q86	8-729-140-96	TRANSISTOR 2SD774-34		R51	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
				R52	1-216-097-00	METAL GLAZE 100K 5% 1/10W	

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R53	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R130	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W
R54	1-216-025-00	METAL GLAZE	100 5% 1/10W	R131	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R55	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W	R132	1-216-651-11	METAL CHIP	1K 0.50% 1/10W
R56	1-216-025-00	METAL GLAZE	100 5% 1/10W	R133	1-216-025-00	METAL GLAZE	100 5% 1/10W
R57	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R134	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R58	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R135	1-216-635-11	METAL CHIP	220 0.50% 1/10W
R59	1-216-025-00	METAL GLAZE	100 5% 1/10W	R136	1-216-635-11	METAL CHIP	220 0.50% 1/10W
R60	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R137	1-216-025-00	METAL GLAZE	100 5% 1/10W
R61	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R138	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R62	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R139	1-216-025-00	METAL GLAZE	100 5% 1/10W
R63	1-216-025-00	METAL GLAZE	100 5% 1/10W	R140	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R64	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R141	1-216-025-00	METAL GLAZE	100 5% 1/10W
R65	1-216-025-00	METAL GLAZE	100 5% 1/10W	R142	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R66	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R143	1-216-025-00	METAL GLAZE	100 5% 1/10W
R67	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R150	1-216-025-00	METAL GLAZE	100 5% 1/10W
R68	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W	R153	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R69	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R154	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R70	1-216-025-00	METAL GLAZE	100 5% 1/10W	R157	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R71	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R158	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R72	1-216-025-00	METAL GLAZE	100 5% 1/10W	R161	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R73	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R163	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R74	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R164	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R75	1-216-089-00	METAL GLAZE	47K 5% 1/10W	R165	1-216-025-00	METAL GLAZE	100 5% 1/10W
R76	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R166	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R77	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R167	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R78	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R169	1-216-655-11	METAL CHIP	1.5K 0.50% 1/10W
R79	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R170	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R80	1-216-025-00	METAL GLAZE	100 5% 1/10W	R171	1-216-657-11	METAL CHIP	1.8K 0.50% 1/10W
R81	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R172	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W
R82	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R173	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R83	1-216-025-00	METAL GLAZE	100 5% 1/10W	R174	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R84	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R175	1-216-655-11	METAL CHIP	1.5K 0.50% 1/10W
R85	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R176	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R86	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R177	1-216-025-00	METAL GLAZE	100 5% 1/10W
R87	1-216-025-00	METAL GLAZE	100 5% 1/10W	R178	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R88	1-216-025-00	METAL GLAZE	100 5% 1/10W	R179	1-216-025-00	METAL GLAZE	100 5% 1/10W
R89	1-216-025-00	METAL GLAZE	100 5% 1/10W	R181	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R103	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R182	1-216-651-11	METAL CHIP	1K 0.50% 1/10W
R104	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R183	1-216-025-00	METAL GLAZE	100 5% 1/10W
R105	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R184	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W
R106	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R185	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R107	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R186	1-216-643-11	METAL CHIP	470 0.50% 1/10W
R108	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R191	1-216-025-00	METAL GLAZE	100 5% 1/10W
R109	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R192	1-216-075-00	METAL GLAZE	12K 5% 1/10W
R110	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R193	1-216-025-00	METAL GLAZE	100 5% 1/10W
R111	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R201	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R112	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R202	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R113	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R203	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W
R114	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R204	1-216-033-00	METAL GLAZE	220 5% 1/10W
R115	1-216-025-00	METAL GLAZE	100 5% 1/10W	R205	1-216-033-00	METAL GLAZE	220 5% 1/10W
R116	1-216-075-00	METAL GLAZE	12K 5% 1/10W	R206	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R117	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R207	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R118	1-216-663-11	METAL CHIP	3.3K 0.50% 1/10W	R208	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R119	1-216-651-11	METAL CHIP	1K 0.50% 1/10W	R209	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R120	1-216-643-11	METAL CHIP	470 0.50% 1/10W	R210	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R121	1-216-657-11	METAL CHIP	1.8K 0.50% 1/10W	R211	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R122	1-216-667-11	METAL CHIP	4.7K 0.50% 1/10W	R212	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R123	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R213	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R124	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R214	1-216-089-00	METAL GLAZE	47K 5% 1/10W
R125	1-216-659-11	METAL CHIP	2.2K 0.50% 1/10W	R215	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W
R126	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R216	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
R127	1-216-025-00	METAL GLAZE	100 5% 1/10W	R217	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
R128	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R218	1-216-061-00	METAL GLAZE	3.3K 5% 1/10W
R129	1-216-643-11	METAL CHIP	470 0.50% 1/10W				

BT C DA

Les composants identifiés par une
trame et une marque Δ sont
critiques pour la sécurité.
Ne les remplacer que par une pièce
portant le numéro spécifié.

The components identified by
shading and mark Δ are critical
for safety.
Replace only with part number
specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK
R219	1-215-881-11	METAL OXIDE 15 5% 2W F	
R331	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R332	1-216-288-11	METAL GLAZE 5.6M 5% 1/8W	
R341	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R342	1-216-288-11	METAL GLAZE 5.6M 5% 1/8W	
R361	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R362	1-216-288-11	METAL GLAZE 5.6M 5% 1/8W	
R501	1-216-121-00	METAL GLAZE 1M 5% 1/10W	
R502	1-216-049-00	METAL GLAZE 1K 5% 1/10W	

<VARIABLE RESISTOR>

RV1	1-237-515-21	RES. ADJ. CERMET 1K	
RV2	1-237-517-21	RES. ADJ. CERMET 5K	
RV3	1-237-515-21	RES. ADJ. CERMET 1K	
RV4	1-237-515-21	RES. ADJ. CERMET 1K	
RV5	1-237-515-21	RES. ADJ. CERMET 1K	
RV6	1-237-517-21	RES. ADJ. CERMET 5K	
RV7	1-237-515-21	RES. ADJ. CERMET 1K	
RV8	1-237-515-21	RES. ADJ. CERMET 1K	
RV9	1-237-516-21	RES. ADJ. CERMET 2K	
RV10	1-237-515-21	RES. ADJ. CERMET 1K	
RV11	1-237-516-21	RES. ADJ. CERMET 2K	
RV12	1-237-515-21	RES. ADJ. CERMET 1K	

<CRYSTAL>

X1	1-567-790-11	VIBRATOR, CRYSTAL	
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*A-1331-020-A C BOARD, COMPLETE

*1-508-766-00 PIN, CONNECTOR (5MM PITCH) 4P
*1-508-786-00 PIN, CONNECTOR (5MM PITCH) 2P
 Δ 1-526-798-37 SOCKET, CRT
*1-566-054-11 PIN, CONNECTOR 2P
*1-566-055-11 PIN, CONNECTOR 3P

*1-566-056-11 PIN, CONNECTOR 4P
*4-379-160-01 COVER (REAR LID), CV
*4-379-167-01 COVER (MAIN), CV

<CAPACITOR>

C1	1-162-114-00	CERAMIC 0.0047MF 2KV	
C2	1-129-724-00	FILM 0.068MF 10% 630V	
C3	1-124-910-11	ELECT 47MF 20% 25V	
C4	1-162-114-00	CERAMIC 0.0047MF 2KV	
C6	1-124-910-11	ELECT 47MF 20% 25V	
C7	1-162-114-00	CERAMIC 0.0047MF 2KV	

<DIODE>

D1	8-719-911-19	DIODE 1SS119	
D3	8-719-911-19	DIODE 1SS119	
D4	8-719-911-19	DIODE 1SS119	
D5	8-719-911-19	DIODE 1SS119	

<COIL>

L1	1-408-414-00	INDUCTOR 27UH	
L2	1-408-414-00	INDUCTOR 27UH	
L3	1-408-414-00	INDUCTOR 27UH	

REF.NO. PART NO. DESCRIPTION REMARK

<TRANSISTOR>

Q1	8-729-804-48	TRANSISTOR 2SC3675	
Q2	8-729-804-48	TRANSISTOR 2SC3675	
Q3	8-729-255-12	TRANSISTOR 2SC2551-0	
Q4	8-729-119-78	TRANSISTOR 2SC2785-HFE	

<RESISTOR>

R1	1-202-818-00	SOLID 1K 10% 1/2W	
R2	1-202-818-00	SOLID 1K 10% 1/2W	
R3	1-202-818-00	SOLID 1K 10% 1/2W	
R4	1-249-433-11	CARBON 22K 5% 1/4W	
R5	1-202-818-00	SOLID 1K 10% 1/2W	
R6	1-202-818-00	SOLID 1K 10% 1/2W	
R7	1-249-433-11	CARBON 22K 5% 1/4W	
R8	1-202-818-00	SOLID 1K 10% 1/2W	
R9	1-202-818-00	SOLID 1K 10% 1/2W	
R10	1-249-433-11	CARBON 22K 5% 1/4W	
R11	1-202-719-00	SOLID 1M 10% 1/2W	
R13	1-202-735-00	SOLID 22M 10% 1/2W	
R14	1-202-818-00	SOLID 1K 10% 1/2W	
R15	1-202-721-00	SOLID 1.5M 10% 1/2W	
R16	1-202-848-00	SOLID 680K 10% 1/2W	
R17	1-249-438-11	CARBON 56K 5% 1/4W	
R18	1-202-719-00	SOLID 1M 10% 1/2W	
R20	1-249-430-11	CARBON 12K 5% 1/4W	
R21	1-249-429-11	CARBON 10K 5% 1/4W	
R22	1-249-427-11	CARBON 6.8K 5% 1/4W	
R27	1-249-417-11	CARBON 1K 5% 1/4W	
R28	1-202-818-00	SOLID 1K 10% 1/2W	
R30	1-202-818-00	SOLID 1K 10% 1/2W	
R31	1-202-818-00	SOLID 1K 10% 1/2W	

<VARIABLE RESISTOR>

RV1	1-230-798-11	RES. ADJ. METAL GLAZE 90M	
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<SPARK GAP>

SG1	1-519-422-11	GAP, SPARK	
SG3	1-519-422-11	GAP, SPARK	
SG4	1-519-422-11	GAP, SPARK	
SG5	1-519-422-11	GAP, SPARK	
SG6	1-519-422-11	GAP, SPARK	

*A-1345-882-B DA BOARD, COMPLETE

*1-566-055-11 PIN, CONNECTOR 3P
*1-566-056-11 PIN, CONNECTOR 4P
*1-566-057-11 PIN, CONNECTOR 5P
*1-566-058-11 PIN, CONNECTOR 6P
*1-566-060-11 PIN, CONNECTOR 8P

*1-566-062-11 PIN, CONNECTOR 10P

<CAPACITOR>

C1	1-136-153-00	FILM 0.01MF 5% 50V	
C2	1-136-165-00	FILM 0.1MF 5% 50V	
C3	1-126-163-11	ELECT 4.7MF 20% 16V	
C4	1-126-160-11	ELECT 1MF 20% 50V	
C5	1-126-160-11	ELECT 1MF 20% 50V	
C6	1-126-160-11	ELECT 1MF 20% 50V	

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK	
C7	1-126-160-11	ELECT	1MF	20%	50V	IC11	8-759-503-91	IC TL082ACP
C8	1-101-004-00	CERAMIC	0.01MF		50V	IC12	8-759-503-91	IC TL082ACP
C9	1-101-004-00	CERAMIC	0.01MF		50V	IC13	8-759-503-91	IC TL082ACP
C10	1-101-004-00	CERAMIC	0.01MF		50V	IC14	8-759-145-58	IC UPC4558C
C11	1-102-973-00	CERAMIC	100PF	5%	50V	IC15	8-759-503-91	IC TL082ACP
C12	1-136-153-00	FILM	0.01MF	5%	50V	IC16	8-759-145-58	IC UPC4558C
C13	1-136-153-00	FILM	0.01MF	5%	50V	IC17	8-759-729-03	IC NJM2903D
C14	1-101-004-00	CERAMIC	0.01MF		50V	IC18	8-759-729-03	IC NJM2903D
C15	1-101-004-00	CERAMIC	0.01MF		50V	IC20	8-759-929-62	IC LM7812CT
C16	1-126-160-11	ELECT	1MF	20%	50V	IC21	8-759-929-65	IC LM7912CT
C17	1-102-820-00	CERAMIC	330PF	5%	50V	IC22	8-759-701-56	IC NJM78M05FA
C18	1-136-153-00	FILM	0.01MF	5%	50V	IC23	8-759-701-65	IC NJM79M05FA
C19	1-126-160-11	ELECT	1MF	20%	50V			
C20	1-101-004-00	CERAMIC	0.01MF		50V			
C21	1-101-004-00	CERAMIC	0.01MF		50V			
C22	1-101-004-00	CERAMIC	0.01MF		50V	Q1	8-729-900-89	TRANSISTOR DTC144ES
C23	1-101-004-00	CERAMIC	0.01MF		50V	Q2	8-729-255-12	TRANSISTOR 2SC2551-0
C24	1-102-978-00	CERAMIC	220PF	5%	50V	Q3	8-729-119-78	TRANSISTOR 2SC2785-HFE
C25	1-101-004-00	CERAMIC	0.01MF		50V			
C50	1-124-242-00	ELECT	33MF	20%	25V			
C51	1-124-589-11	ELECT	47MF	20%	16V			
C52	1-126-157-11	ELECT	10MF	20%	16V	R1	1-249-441-11	CARBON 100K 5% 1/4W
C55	1-101-004-00	CERAMIC	0.01MF		50V	R2	1-249-423-11	CARBON 3.3K 5% 1/4W
C56	1-101-004-00	CERAMIC	0.01MF		50V	R3	1-249-423-11	CARBON 3.3K 5% 1/4W
C57	1-101-004-00	CERAMIC	0.01MF		50V	R4	1-249-429-11	CARBON 10K 5% 1/4W
C60	1-124-242-00	ELECT	33MF	20%	25V	R5	1-249-429-11	CARBON 10K 5% 1/4W
C61	1-124-589-11	ELECT	47MF	20%	16V	R6	1-249-431-11	CARBON 15K 5% 1/4W
C62	1-126-157-11	ELECT	10MF	20%	16V	R7	1-249-429-11	CARBON 10K 5% 1/4W
C63	1-126-157-11	ELECT	10MF	20%	16V	R8	1-249-431-11	CARBON 15K 5% 1/4W
C65	1-101-004-00	CERAMIC	0.01MF		50V	R9	1-249-431-11	CARBON 15K 5% 1/4W
C66	1-101-004-00	CERAMIC	0.01MF		50V	R10	1-249-431-11	CARBON 15K 5% 1/4W
C70	1-124-242-00	ELECT	33MF	20%	25V	R11	1-249-431-11	CARBON 15K 5% 1/4W
C71	1-126-157-11	ELECT	10MF	20%	16V	R12	1-249-441-11	CARBON 100K 5% 1/4W
C72	1-126-157-11	ELECT	10MF	20%	16V	R16	1-249-429-11	CARBON 10K 5% 1/4W
C73	1-124-589-11	ELECT	47MF	20%	16V	R17	1-249-429-11	CARBON 10K 5% 1/4W
C75	1-101-004-00	CERAMIC	0.01MF		50V	R18	1-249-441-11	CARBON 100K 5% 1/4W
C76	1-101-004-00	CERAMIC	0.01MF		50V	R19	1-249-429-11	CARBON 10K 5% 1/4W
C80	1-124-242-00	ELECT	33MF	20%	25V	R20	1-249-429-11	CARBON 10K 5% 1/4W
C81	1-126-157-11	ELECT	10MF	20%	16V	R21	1-247-891-00	CARBON 330K 5% 1/4W
C82	1-126-157-11	ELECT	10MF	20%	16V	R22	1-247-903-91	CARBON 1M 5% 1/4W
C83	1-126-157-11	ELECT	10MF	20%	16V	R23	1-249-439-11	CARBON 68K 5% 1/4W
C85	1-101-004-00	CERAMIC	0.01MF		50V	R24	1-249-435-11	CARBON 33K 5% 1/4W
C86	1-101-004-00	CERAMIC	0.01MF		50V	R25	1-247-891-00	CARBON 330K 5% 1/4W
						R26	1-249-439-11	CARBON 68K 5% 1/4W
						R27	1-249-429-11	CARBON 10K 5% 1/4W
						R28	1-249-429-11	CARBON 10K 5% 1/4W
						R29	1-249-429-11	CARBON 10K 5% 1/4W
						R30	1-249-429-11	CARBON 10K 5% 1/4W
						R31	1-249-429-11	CARBON 10K 5% 1/4W
						R32	1-249-429-11	CARBON 10K 5% 1/4W
						R34	1-249-429-11	CARBON 10K 5% 1/4W
						R35	1-249-429-11	CARBON 10K 5% 1/4W
						R36	1-249-420-11	CARBON 1.8K 5% 1/4W
						R37	1-249-433-11	CARBON 22K 5% 1/4W
						R38	1-249-435-11	CARBON 33K 5% 1/4W
						R39	1-249-437-11	CARBON 47K 5% 1/4W
						R40	1-249-433-11	CARBON 22K 5% 1/4W
						R41	1-249-437-11	CARBON 47K 5% 1/4W
						R42	1-249-429-11	CARBON 10K 5% 1/4W
						R43	1-249-440-11	CARBON 82K 5% 1/4W
						R44	1-249-441-11	CARBON 100K 5% 1/4W
						R45	1-249-441-11	CARBON 100K 5% 1/4W
						R46	1-247-887-00	CARBON 220K 5% 1/4W
						R47	1-249-439-11	CARBON 68K 5% 1/4W

DA DB

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R48	1-249-439-11	CARBON	68K 5% 1/4W	RV14	1-237-518-21	RES, ADJ, CERMET 10K	
R49	1-249-426-11	CARBON	5.6K 5% 1/4W	RV15	1-237-518-21	RES, ADJ, CERMET 10K	
R50	1-249-429-11	CARBON	10K 5% 1/4W	RV16	1-237-518-21	RES, ADJ, CERMET 10K	
R51	1-249-434-11	CARBON	27K 5% 1/4W	RV17	1-237-518-21	RES, ADJ, CERMET 10K	
R52	1-249-433-11	CARBON	22K 5% 1/4W	RV18	1-237-518-21	RES, ADJ, CERMET 10K	
R53	1-249-425-11	CARBON	4.7K 5% 1/4W	RV19	1-237-518-21	RES, ADJ, CERMET 10K	
R54	1-249-425-11	CARBON	4.7K 5% 1/4W	RV20	1-237-518-21	RES, ADJ, CERMET 10K	
R55	1-249-433-11	CARBON	22K 5% 1/4W	RV21	1-237-518-21	RES, ADJ, CERMET 10K	
R56	1-249-429-11	CARBON	10K 5% 1/4W	RV22	1-237-518-21	RES, ADJ, CERMET 10K	
R57	1-249-429-11	CARBON	10K 5% 1/4W	RV23	1-237-518-21	RES, ADJ, CERMET 10K	
R59	1-247-895-00	CARBON	470K 5% 1/4W	RV24	1-237-518-21	RES, ADJ, CERMET 10K	
R60	1-249-439-11	CARBON	68K 5% 1/4W	RV25	1-237-518-21	RES, ADJ, CERMET 10K	
R61	1-249-429-11	CARBON	10K 5% 1/4W	RV31	1-237-518-21	RES, ADJ, CERMET 10K	
R62	1-247-895-00	CARBON	470K 5% 1/4W	RV32	1-237-518-21	RES, ADJ, CERMET 10K	
R63	1-249-429-11	CARBON	10K 5% 1/4W	*****			
R64	1-249-441-11	CARBON	100K 5% 1/4W	*A-1345-884-A DB BOARD, COMPLETE			
R65	1-249-429-11	CARBON	10K 5% 1/4W	*****			
R66	1-247-885-00	CARBON	180K 5% 1/4W	*1-566-056-11 PIN, CONNECTOR 4P			
R67	1-247-891-00	CARBON	330K 5% 1/4W	*1-566-062-11 PIN, CONNECTOR 10P			
R68	1-249-429-11	CARBON	10K 5% 1/4W	<CAPACITOR>			
R69	1-249-429-11	CARBON	10K 5% 1/4W	C201	1-101-004-00	CERAMIC	0.01MF 50V
R70	1-249-429-11	CARBON	10K 5% 1/4W	C202	1-136-153-00	FILM	0.01MF 5% 50V
R71	1-215-445-00	METAL	10K 1% 1/4W	C203	1-136-165-00	FILM	0.1MF 5% 50V
R72	1-249-429-11	CARBON	10K 5% 1/4W	C204	1-126-157-11	ELECT	10MF 20% 16V
R73	1-249-429-11	CARBON	10K 5% 1/4W	C205	1-130-479-00	MYLAR	0.0047MF 5% 50V
R74	1-249-429-11	CARBON	10K 5% 1/4W	C206	1-124-234-00	ELECT	22MF 20% 16V
R75	1-249-439-11	CARBON	68K 5% 1/4W	C207	1-124-234-00	ELECT	22MF 20% 16V
R76	1-249-430-11	CARBON	12K 5% 1/4W	C208	1-130-475-00	MYLAR	0.0022MF 5% 50V
R77	1-249-429-11	CARBON	10K 5% 1/4W	C209	1-130-477-00	FILM	0.0033MF 5% 50V
R78	1-249-439-11	CARBON	68K 5% 1/4W	C210	1-102-518-11	CERAMIC	33PF 5% 50V
R79	1-249-429-11	CARBON	10K 5% 1/4W	C211	1-101-004-00	CERAMIC	0.01MF 50V
R80	1-249-430-11	CARBON	12K 5% 1/4W	C212	1-101-004-00	CERAMIC	0.01MF 50V
R81	1-249-423-11	CARBON	3.3K 5% 1/4W	C214	1-126-157-11	ELECT	10MF 20% 16V
R82	1-249-417-11	CARBON	1K 5% 1/4W	C215	1-126-157-11	ELECT	10MF 20% 16V
R83	1-249-429-11	CARBON	10K 5% 1/4W	C216	1-101-004-00	CERAMIC	0.01MF 50V
R84	1-249-426-11	CARBON	5.6K 5% 1/4W	C221	1-126-157-11	ELECT	10MF 20% 16V
R85	1-249-428-11	CARBON	8.2K 5% 1/4W	C223	1-101-004-00	CERAMIC	0.01MF 50V
R86	1-249-423-11	CARBON	3.3K 5% 1/4W	C224	1-101-004-00	CERAMIC	0.01MF 50V
R87	1-249-417-11	CARBON	1K 5% 1/4W	C231	1-126-157-11	ELECT	10MF 20% 16V
R88	1-249-429-11	CARBON	10K 5% 1/4W	C233	1-101-004-00	CERAMIC	0.01MF 50V
R89	1-249-429-11	CARBON	10K 5% 1/4W	<DIODE>			
R90	1-249-429-11	CARBON	10K 5% 1/4W	D201	8-719-911-19	DIODE ISS119	
R91	1-215-862-11	METAL OXIDE	68 5% 1W F	D202	8-719-109-74	DIODE RD4.3ESB1	
R92	1-215-862-11	METAL OXIDE	68 5% 1W F	<IC>			
R93	1-247-885-00	CARBON	180K 5% 1/4W	IC201	8-759-503-91	IC TL082ACP	
R94	1-249-426-11	CARBON	5.6K 5% 1/4W	IC202	8-759-729-03	IC NJM2903D	
R101	1-249-431-11	CARBON	15K 5% 1/4W	IC203	8-759-240-69	IC TC4069UBP	
R102	1-249-428-11	CARBON	8.2K 5% 1/4W	IC204	8-759-100-60	IC UPC1377C	
<VARIABLE RESISTOR>				<COIL>			
RV1	1-237-518-21	RES, ADJ, CERMET 10K		L201	1-410-068-11	INDUCTOR	5.6MMH
RV2	1-237-518-21	RES, ADJ, CERMET 10K		<TRANSISTOR>			
RV3	1-237-518-21	RES, ADJ, CERMET 10K		Q201	8-729-900-65	TRANSISTOR DTA144ES	
RV4	1-237-518-21	RES, ADJ, CERMET 10K					
RV5	1-237-518-21	RES, ADJ, CERMET 10K					
RV6	1-237-518-21	RES, ADJ, CERMET 10K					
RV7	1-237-518-21	RES, ADJ, CERMET 10K					
RV8	1-237-518-21	RES, ADJ, CERMET 10K					
RV9	1-237-518-21	RES, ADJ, CERMET 10K					
RV10	1-237-518-21	RES, ADJ, CERMET 10K					
RV11	1-237-518-21	RES, ADJ, CERMET 10K					
RV12	1-237-518-21	RES, ADJ, CERMET 10K					
RV13	1-237-518-21	RES, ADJ, CERMET 10K					

7. ELECTRICAL PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
Q202	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q203	8-729-900-65	TRANSISTOR DTA144ES					
						<CAPACITOR>	

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7. ELECTRICAL PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C201	1-124-478-11	ELECT	100MF 20% 25V	L2	1-459-433-00	COIL (WITH CORE)	
C202	1-124-340-00	ELECT	22MF 20% 200V	L3	1-459-433-00	COIL (WITH CORE)	
C203	1-124-478-11	ELECT	100MF 20% 25V	L4	1-459-111-00	COIL, DRAM CORE (CDI)	
C204	1-102-978-00	CERAMIC	220PF 5% 50V	L5	1-459-111-00	COIL, DRAM CORE (CDI)	
C207	1-124-340-00	ELECT	22MF 20% 200V	L6	1-459-087-00	COIL, HCC DUST CORE 3.9MMH	
C208	1-163-157-00	FILM	0.022MF 5% 50V	L7	1-459-215-00	COIL (WITH CORE)	
C209	1-108-646-00	MYLAR	0.47MF 10% 100V	L8	1-459-207-00	COIL, CORE	
C300	1-124-666-11	ELECT	4.7MF 20% 200V	L9	1-459-433-00	COIL (WITH CORE)	
		<DIODE>		L10	1-459-433-00	COIL (WITH CORE)	
D1	8-719-110-31	DIODE RD12ESB2		L11	1-459-123-00	COIL, DUST CORE (PAC)	
D3	8-719-911-19	DIODE 1SS119				<TRANSISTOR>	
D4	8-719-911-19	DIODE 1SS119		Q1	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D5	8-719-300-76	DIODE RH-1A		Q2	8-729-697-92	TRANSISTOR 2SA979-G	
D6	8-719-000-28	THYRISTOR CRO2AM-8		Q3	8-729-140-96	TRANSISTOR 2SD774-34	
D7	8-719-300-76	DIODE RH-1A		Q4	8-729-208-71	TRANSISTOR 2SC3298B-0	
D8	8-719-928-08	DIODE ERD28-08S		Q5	8-729-208-38	TRANSISTOR 2SA1306A-0	
D9	8-719-300-76	DIODE RH-1A		Q6	8-729-119-80	TRANSISTOR 2SC2688-LK	
D10	8-719-300-76	DIODE RH-1A		Q7	8-729-906-53	TRANSISTOR 2SC2542-15	
D12	8-719-901-19	DIODE V11N		Q8	8-729-255-12	TRANSISTOR 2SC2551-0	
D13	8-719-300-76	DIODE RH-1A		Q9	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D14	8-719-300-76	DIODE RH-1A		Q10	8-729-119-80	TRANSISTOR 2SC2688-LK	
D15	8-719-300-76	DIODE RH-1A		Q11	8-729-800-80	TRANSISTOR 2SD1399-CA	
D16	8-719-300-76	DIODE RH-1A		Q12	8-729-313-42	TRANSISTOR 2SD1134-C	
D28	8-719-911-19	DIODE 1SS119		Q13	8-729-385-82	TRANSISTOR 2SB858-C	
D30	8-719-911-19	DIODE 1SS119		Q14	8-729-119-80	TRANSISTOR 2SC2688-LK	
D32	8-719-300-76	DIODE RH-1A		Q15	8-729-200-17	TRANSISTOR 2SA1091-0	
D33	8-719-300-76	DIODE RH-1A		Q16	8-729-906-53	TRANSISTOR 2SC2542-15	
D35	8-719-911-19	DIODE 1SS119		Q17	8-729-119-80	TRANSISTOR 2SC2688-LK	
D37	8-719-911-19	DIODE 1SS119		Q18	8-729-800-80	TRANSISTOR 2SD1399-CA	
D38	8-719-911-19	DIODE 1SS119		Q19	8-729-119-76	TRANSISTOR 2SA1175-HFE	
D39	8-719-110-31	DIODE RD12ESB2		Q201	8-729-697-92	TRANSISTOR 2SA979-G	
D40	8-719-911-19	DIODE 1SS119		Q202	8-729-140-96	TRANSISTOR 2SD774-34	
D41	8-719-109-66	DIODE RD3.3ESB2		Q203	8-729-309-36	TRANSISTOR 2SA893A-EV	
D42	8-719-300-76	DIODE RH-1A		Q204	8-729-255-12	TRANSISTOR 2SC2551-0	
D50	8-719-000-28	THYRISTOR CRO2AM-8		Q205	8-729-208-38	TRANSISTOR 2SA1306A-0	
D201	8-719-908-03	DIODE GP08D		Q206	8-729-208-71	TRANSISTOR 2SC3298B-0	
D202	8-719-908-03	DIODE GP08D		Q207	8-729-386-12	TRANSISTOR 2SB861-C	
D203	8-719-911-19	DIODE 1SS119		Q208	8-729-255-12	TRANSISTOR 2SC2551-0	
D204	8-719-911-19	DIODE 1SS119				<CONNECTOR>	
D205	8-719-911-19	DIODE 1SS119		R73	*1-506-371-00	PIN, CONNECTOR 2P	
D206	8-719-911-19	DIODE 1SS119		R75	*1-506-371-00	PIN, CONNECTOR 2P	
		<CONNECTOR>				<RESISTOR>	
EA3	*1-566-056-11	PIN, CONNECTOR 4P		R1	1-249-425-11	CARBON 4.7K 5% 1/4W	
EA7	*1-566-055-11	PIN, CONNECTOR 3P		R2	1-249-422-11	CARBON 2.7K 5% 1/4W	
EA10	*1-566-058-11	PIN, CONNECTOR 6P		R3	1-249-441-11	CARBON 100K 5% 1/4W	
EA16	*1-565-495-11	CONNECTOR, BOARD TO BOARD 4P		R4	1-249-435-11	CARBON 33K 5% 1/4W	
EA17	*1-565-495-11	CONNECTOR, BOARD TO BOARD 4P		R5	1-249-429-11	CARBON 10K 5% 1/4W	
EA18	*1-565-495-11	CONNECTOR, BOARD TO BOARD 4P		R6	1-249-429-11	CARBON 10K 5% 1/4W	
EA19	*1-565-495-11	CONNECTOR, BOARD TO BOARD 4P		R7	1-249-429-11	CARBON 10K 5% 1/4W	
		<IC>		R8	1-249-421-11	CARBON 2.2K 5% 1/4W	
IC1	8-759-947-49	IC FA5301P		R9	1-249-431-11	CARBON 15K 5% 1/4W	
IC2	8-759-947-49	IC FA5301P		R10	1-249-438-11	CARBON 56K 5% 1/4W	
IC3	8-759-503-91	IC 7L082ACP		R11	1-249-417-11	CARBON 1K 5% 1/4W	
IC5	8-759-145-58	IC UPC4558C		R12	1-249-421-11	CARBON 2.2K 5% 1/4W	
		<COIL>		R13	1-249-448-11	CARBON 1.2 5% 1/4W	F
L1	1-459-433-00	COIL (WITH CORE)		R14	1-249-448-11	CARBON 1.2 5% 1/4W	F
				R15	1-216-372-11	METAL OXIDE 1.8 5% 2W	F

The components identified by shading and mark **Δ** are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque **Δ** sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- The components identified by **Δ** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
Should replacement be required, replace only with the value originally used.

EA **EB**

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R16	1-249-429-11	CARBON	10K 5% 1/4W	R87	1-216-351-00	METAL OXIDE	1.5 5% 1W F
R17	1-249-429-11	CARBON	10K 5% 1/4W	R88	1-249-441-11	CARBON	100K 5% 1/4W
R18	1-216-460-11	METAL OXIDE	3.9K 5% 2W F	R93	1-249-437-11	CARBON	47K 5% 1/4W
R19	1-216-352-11	METAL OXIDE	1.8 5% 1W F	R94	1-249-415-11	CARBON	680 5% 1/4W
R20	1-249-414-11	CARBON	560 5% 1/4W	R125	1-216-377-11	METAL OXIDE	4.7 5% 2W F
R21	1-249-425-11	CARBON	4.7K 5% 1/4W	R126	1-216-377-11	METAL OXIDE	4.7 5% 2W F
R22	1-249-426-11	CARBON	5.6K 5% 1/4W	R127	1-202-719-00	SOLID	1M 10% 1/2W
R23	1-247-852-11	CARBON	7.5K 5% 1/4W	R160	1-249-425-11	CARBON	4.7K 5% 1/4W
R24	1-249-436-11	CARBON	39K 5% 1/4W	R161	1-249-422-11	CARBON	2.7K 5% 1/4W
R25	1-249-434-11	CARBON	27K 5% 1/4W	R162	1-249-441-11	CARBON	100K 5% 1/4W
R26	1-249-429-11	CARBON	10K 5% 1/4W	R163	1-249-435-11	CARBON	33K 5% 1/4W
R27	1-249-429-11	CARBON	10K 5% 1/4W	R170	1-249-415-11	CARBON	680 5% 1/4W
R28	1-249-434-11	CARBON	27K 5% 1/4W	R201	1-249-429-11	CARBON	10K 5% 1/4W
R29	1-249-427-11	CARBON	6.8K 5% 1/4W	R202	1-249-430-11	CARBON	12K 5% 1/4W
R31	1-215-433-00	METAL	3.3K 1% 1/4W	R203	1-249-426-11	CARBON	5.6K 5% 1/4W
R32	1-215-435-00	METAL	3.9K 1% 1/4W	R204	1-216-465-11	METAL OXIDE	27K 5% 2W F
R33	1-249-429-11	CARBON	10K 5% 1/4W	R205	1-247-802-11	CARBON	62 5% 1/4W
R34	1-249-417-11	CARBON	1K 5% 1/4W	R206	1-249-414-11	CARBON	560 5% 1/4W
R35	1-249-432-11	CARBON	18K 5% 1/4W	R207	1-249-448-11	CARBON	1.2 5% 1/4W F
R37	1-249-429-11	CARBON	10K 5% 1/4W	R208	1-249-448-11	CARBON	1.2 5% 1/4W F
R38	1-249-429-11	CARBON	10K 5% 1/4W	R209	1-215-889-00	METAL OXIDE	330 5% 2W F
R39	1-215-900-11	METAL OXIDE	22K 5% 2W F	R210	1-216-375-00	METAL OXIDE	3.3 5% 2W F
R40	1-216-423-11	METAL OXIDE	27 5% 1W F	R211	1-249-429-11	CARBON	10K 5% 1/4W
R41	1-216-349-00	METAL OXIDE	1 5% 1W F	R212	1-249-425-11	CARBON	4.7K 5% 1/4W
R42	1-212-857-00	FUSIBLE	10 5% 1/4W F	R213	1-247-719-11	CARBON	3.3K 5% 1/4W F
R43	1-249-417-11	CARBON	1K 5% 1/4W	R214	1-247-739-11	CARBON	100 5% 1/2W F
R44	1-215-473-00	METAL	150K 1% 1/4W	R215	1-215-896-00	METAL OXIDE	4.7K 5% 2W F
R47	1-215-445-00	METAL	10K 1% 1/4W	R216	1-249-429-11	CARBON	10K 5% 1/4W
R49	1-249-448-11	CARBON	1.2 5% 1/4W F	R217	1-249-429-11	CARBON	10K 5% 1/4W
R50	1-249-429-11	CARBON	10K 5% 1/4W	R301	1-215-948-00	WIREWOUND	10K 10% 5W F
R51	1-249-417-11	CARBON	1K 5% 1/4W	<VARIABLE RESISTOR>			
R52	1-249-405-11	CARBON	100 5% 1/4W	RV1	1-237-514-21	RES, ADJ, CERMET 500	
R53	1-216-360-11	METAL OXIDE	8.2 5% 1W F	<TRANSFORMER>			
R54	1-212-998-00	FUSIBLE	470 5% 1/2W F	T1	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE	
R55	1-249-417-11	CARBON	1K 5% 1/4W	T2	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE	
R56	1-249-419-11	CARBON	1.5K 5% 1/4W	T3	1-439-383-11	NOT	
R57	1-249-419-11	CARBON	1.5K 5% 1/4W	T4	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE	
R58	1-249-448-11	CARBON	1.2 5% 1/4W F	T5	1-439-384-11	LOT	
R59	1-249-448-11	CARBON	1.2 5% 1/4W F	T6	1-437-078-00	TRANSFORMER, HORIZONTAL DRIVE	
R61	1-249-425-11	CARBON	4.7K 5% 1/4W	T7	1-407-849-00	TRANSFORMER, D.F	
R62	1-249-425-11	CARBON	4.7K 5% 1/4W	*****			
R63	1-249-441-11	CARBON	100K 5% 1/4W	*1-631-685-11	EB BOARD	*****	
R65	1-249-434-11	CARBON	27K 5% 1/4W	*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P		
R66	1-249-429-11	CARBON	10K 5% 1/4W	<CAPACITOR>			
R67	1-249-429-11	CARBON	10K 5% 1/4W	C71	1-124-120-11	ELECT	220MF 20% 16V
R68	1-249-434-11	CARBON	27K 5% 1/4W	C73	1-108-634-11	NYLAR	0.047MF 10% 100V
R69	1-249-427-11	CARBON	6.8K 5% 1/4W	C74	1-126-966-11	ELECT	10MF 20% 16V
R70	1-249-414-11	CARBON	560 5% 1/4W	C75	1-161-051-00	CERAMIC	0.01MF 10% 50V
R71	1-215-461-00	METAL	47K 1% 1/4W	C76	1-123-875-11	ELECT	10MF 20% 50V
R72	1-215-452-00	METAL	20K 1% 1/4W	C78	1-136-165-00	FILM	0.1MF 5% 50V
ΔR73	Δ	METAL	1/4W	C82	1-161-051-00	CERAMIC	0.01MF 10% 50V
R74	1-215-447-00	METAL	12K 1% 1/4W	C83	1-124-907-11	ELECT	10MF 20% 50V
ΔR75	Δ	METAL	1/4W	C84	1-126-233-11	ELECT	22MF 20% 16V
R76	1-249-421-11	CARBON	2.2K 5% 1/4W	C85	1-136-165-00	FILM	0.1MF 5% 50V
R77	1-247-887-00	CARBON	220K 5% 1/4W				
R78	1-249-429-11	CARBON	10K 5% 1/4W				
R79	1-249-429-11	CARBON	10K 5% 1/4W				
R80	1-249-429-11	CARBON	10K 5% 1/4W				
R81	1-215-900-11	METAL OXIDE	22K 5% 2W F				
R82	1-216-356-00	METAL OXIDE	3.9 5% 1W F				
R83	1-216-348-00	METAL OXIDE	0.82 5% 1W F				
R84	1-249-417-11	CARBON	1K 5% 1/4W				
R85	1-249-417-11	CARBON	1K 5% 1/4W				
R86	1-215-948-00	METAL OXIDE	10K 5% 5W F				

EB EC

The components identified by **EB** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
Should replacement be required, replace only with the value originally used.

Les composants identifiés par une trame et une marque **EB** sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark **EB** are critical for safety.
Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK
C86	1-136-165-00	FILM 0.1MF 5% 50V	
C91	1-124-120-11	ELECT 220MF 20% 16V	
C93	1-124-907-11	ELECT 10MF 20% 50V	
C94	1-126-233-11	ELECT 22MF 20% 16V	
C95	1-124-666-11	ELECT 4.7MF 20% 200V	
C96	1-124-915-11	ELECT 10MF 20% 25V	

<DIODE>

D19	8-719-911-19	DIODE ISS119	
D20	8-719-911-19	DIODE ISS119	
D24	8-759-157-40	IC UPC574J	
D25	8-719-911-19	DIODE ISS119	
D26	8-719-911-19	DIODE ISS119	
D27	8-719-000-28	THYRISTOR CRO2AM-8	
D29	8-759-157-40	IC UPC574J	
D36	8-719-911-19	DIODE ISS119	
D51	8-719-000-28	THYRISTOR CRO2AM-8	

<CONNECTOR>

EB1	*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P	
EB2	*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P	

<IC>

IC4	8-759-729-03	IC NJM2903D	
IC6	8-759-729-03	IC NJM2903D	

<TRANSISTOR>

Q20	8-729-119-78	TRANSISTOR 2SC2785-HFE	
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<CONNECTOR>

R106	*1-506-371-00	PIN, CONNECTOR 2P	
R108	*1-506-371-00	PIN, CONNECTOR 2P	
R115	*1-506-371-00	PIN, CONNECTOR 2P	
R135	*1-506-371-00	PIN, CONNECTOR 2P	

<RESISTOR>

R89	1-249-431-11	CARBON 15K 5% 1/4W	
R90	1-249-417-11	CARBON 1K 5% 1/4W	
R95	1-249-429-11	CARBON 10K 5% 1/4W	
R96	1-249-421-11	CARBON 2.2K 5% 1/4W	
R97	1-249-393-11	CARBON 10 5% 1/4W	
R98	1-249-429-11	CARBON 10K 5% 1/4W	
R99	1-249-441-11	CARBON 100K 5% 1/4W	
R100	1-249-429-11	CARBON 10K 5% 1/4W	
R101	1-249-429-11	CARBON 10K 5% 1/4W	
R102	1-215-899-11	METAL OXIDE 15K 5% 2W F	
R103	1-215-899-11	METAL OXIDE 15K 5% 2W F	
R104	1-249-423-11	CARBON 3.3K 5% 1/4W	
R105	1-215-453-00	METAL 22K 1% 1/4W	
EB106	1-215-455-00	METAL 27K 1% 1/4W	
R107	1-215-455-00	METAL 27K 1% 1/4W	
EB108	1-249-441-11	CARBON 100K 5% 1/4W	
R111	1-249-423-11	CARBON 3.3K 5% 1/4W	
R112	1-215-455-00	METAL 27K 1% 1/4W	
R113	1-215-437-00	METAL 4.7K 1% 1/4W	
R114	1-215-437-00	METAL 4.7K 1% 1/4W	
EB115	1-215-486-00	METAL 510K 1% 1/4W	
R116	1-215-486-00	METAL 510K 1% 1/4W	

REF.NO.	PART NO.	DESCRIPTION	REMARK
R117	1-215-453-00	METAL 22K 1% 1/4W	
R118	1-215-469-00	METAL 100K 1% 1/4W	
R119	1-215-437-00	METAL 4.7K 1% 1/4W	
R120	1-215-437-00	METAL 4.7K 1% 1/4W	
R121	1-215-427-00	METAL 1.8K 1% 1/4W	
R122	1-215-437-00	METAL 4.7K 1% 1/4W	
R123	1-215-437-00	METAL 4.7K 1% 1/4W	
R124	1-215-427-00	METAL 1.8K 1% 1/4W	

R130	1-249-417-11	CARBON 1K 5% 1/4W	
R131	1-249-431-11	CARBON 15K 5% 1/4W	
R132	1-249-423-11	CARBON 3.3K 5% 1/4W	
R133	1-215-455-00	METAL 27K 1% 1/4W	
R134	1-215-437-00	METAL 4.7K 1% 1/4W	

EB135	1-215-486-00	METAL 510K 1% 1/4W	
R136	1-215-453-00	METAL 22K 1% 1/4W	
R137	1-215-469-00	METAL 100K 1% 1/4W	
R138	1-215-899-11	METAL OXIDE 15K 5% 2W F	

R141	1-215-899-11	METAL OXIDE 15K 5% 2W F	
R145	1-249-413-11	CARBON 470 5% 1/4W	
R151	1-249-417-11	CARBON 1K 5% 1/4W	
R152	1-249-417-11	CARBON 1K 5% 1/4W	
R153	1-249-417-11	CARBON 1K 5% 1/4W	

R155	1-249-413-11	CARBON 470 5% 1/4W	
R156	1-249-423-11	CARBON 3.3K 5% 1/4W	

*1-631-686-11 EC BOARD

*1-565-480-11 CONNECTOR, BOARD TO BOARD 4P
*1-566-041-11 PIN, CONNECTOR 2P

<CAPACITOR>

C97	1-124-907-11	ELECT 10MF 20% 50V	
C98	1-124-907-11	ELECT 10MF 20% 50V	
C210	1-102-824-00	CERAMIC 470PF 5% 50V	
C211	1-136-165-00	FILM 0.1MF 5% 50V	

<DIODE>

D210	8-719-911-19	DIODE ISS119	
D211	8-719-911-19	DIODE ISS119	
D212	8-719-911-19	DIODE ISS119	
D213	8-719-911-19	DIODE ISS119	

<CONNECTOR>

EC1	*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P	
EC2	*1-565-480-11	CONNECTOR, BOARD TO BOARD 4P	

<IC>

IC201	8-759-145-58	IC UPC4558C	
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<TRANSISTOR>

Q210	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q211	8-729-119-76	TRANSISTOR 2SA1175-HFE	

<RESISTOR>

R220	1-249-429-11	CARBON 10K 5% 1/4W	
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The components identified by shading and mark **Δ** are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque **Δ** sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

EC **GA**

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R221	1-249-429-11	CARBON 10K 5% 1/4W		C19	1-102-030-00	CERAMIC 330PF	10% 500V
R222	1-249-429-11	CARBON 10K 5% 1/4W		C20	1-162-117-00	CERAMIC 100PF	10% 500V
R223	1-247-848-11	CARBON 5.1K 5% 1/4W		C21	1-102-038-00	CERAMIC 0.001MF	500V
R224	1-216-423-11	METAL OXIDE 27 5% 1W F		C22	1-162-117-00	CERAMIC 100PF	10% 500V
R225	1-249-431-11	CARBON 15K 5% 1/4W		C23	1-106-375-12	MYLAR 0.022MF	10% 100V
R226	1-249-431-11	CARBON 15K 5% 1/4W		C24	1-108-704-11	MYLAR 0.1MF	10% 200V
R227	1-249-456-11	CARBON 5.6 5% 1/4W F		C25	1-124-903-11	ELECT 1MF	20% 50V
R228	1-249-456-11	CARBON 5.6 5% 1/4W F		C26	1-101-361-00	CERAMIC 150PF	5% 50V
R229	1-215-867-00	METAL OXIDE 470 5% 1W F		C27	1-101-361-00	CERAMIC 150PF	5% 50V
*****				C28	1-126-966-11	ELECT 10MF	20% 16V
*A-1316-089-A	GA BOARD, COMPLETE (BVM-1916 ONLY)			C29	1-124-910-11	ELECT 47MF	20% 25V
	*****			C30	1-162-117-00	CERAMIC 100PF	10% 500V
*A-1316-090-A	GA BOARD, COMPLETE (BVM-2016P ONLY)			C31	1-102-030-00	CERAMIC 330PF	10% 500V
	*****			C32	1-124-903-11	ELECT 1MF	20% 50V
	(INCLUDING GB BOARD)			C33	1-101-361-00	CERAMIC 150PF	5% 50V
1-533-167-21	HOLDER, FUSE			C34	1-101-361-00	CERAMIC 150PF	5% 50V
1-533-168-21	HOLDER, FUSE			C35	1-124-903-11	ELECT 1MF	20% 50V
1-535-316-11	TERMINAL, GROUND (M4)			C36	1-124-910-11	ELECT 47MF	20% 25V
Δ 1-570-173-22	SWITCH, VOLTAGE CHANGE			C37	1-130-734-00	FILM 0.0068MF	5% 50V
Δ 1-580-375-11	INLET 3P			C38	1-136-165-00	FILM 0.1MF	5% 50V
2-990-241-02	HOLDER (A), PLUG			C39	1-136-165-00	FILM 0.1MF	5% 50V
*3-337-402-01	BAND, BINDING			C40	1-123-381-00	ELECT 2.2MF	20% 50V
*4-347-706-00	HEAT SINK (TR)			C41	1-102-038-00	CERAMIC 0.001MF	500V
*4-371-879-02	COVER, AC SELECT			C42	1-136-165-00	FILM 0.1MF	5% 50V
4-379-403-01	SPACER (G1), POLISHING			C43	1-136-165-00	FILM 0.1MF	5% 50V
*4-379-408-01	INSULATOR (G3)			C44	1-126-966-11	ELECT 10MF	20% 16V
*4-379-409-01	NUT, PLATE			C45	1-162-132-00	CERAMIC 270PF	10% 2KV
4-379-410-01	SPACER (G2), POLISHING			C46	1-126-966-11	ELECT 10MF	20% 16V
*4-379-430-01	PANEL, POWER			C47	1-136-173-00	FILM 0.47MF	5% 50V
*4-386-847-01	HEAT SINK (S.R.T)			C48	1-136-173-00	FILM 0.47MF	5% 50V
*4-386-848-01	BAND (S.R.T)			C49	1-126-966-11	ELECT 10MF	20% 16V
*4-393-031-01	COVER, FUSE HOLDER			C50	1-101-006-00	CERAMIC 0.047MF	50V
*4-601-466-11	COVER, 3P INLET			C51	1-101-006-00	CERAMIC 0.047MF	50V
7-682-150-01	SCREW +P 3X12			C52	1-101-006-00	CERAMIC 0.047MF	50V
7-682-552-04	SCREW +P 3X16			C53	1-101-006-00	CERAMIC 0.047MF	50V
7-682-554-04	SCREW +P 3X25			C54	1-101-006-00	CERAMIC 0.047MF	50V
7-682-560-04	SCREW +P 4X6			C55	1-126-966-11	ELECT 10MF	20% 16V
7-682-247-04	SCREW +K 3X6			C56	1-136-201-11	FILM 0.22MF	5% 400V
7-682-547-09	SCREW +B 3X6			C57	1-124-915-11	ELECT 10MF	20% 25V
7-682-948-01	SCREW +PSW 3X8			C58	1-124-902-00	ELECT 0.47MF	20% 50V
7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3			C59	1-130-734-00	FILM 0.0068MF	5% 50V
7-685-871-01	SCREW +BVTT 3X6 (S)			C60	1-102-228-00	CERAMIC 470PF	10% 500V
<CAPACITOR>				C61	1-102-228-00	CERAMIC 470PF	10% 500V
C1	1-124-024-00	ELECT 4.7MF 20% 350V		C62	1-102-228-00	CERAMIC 470PF	10% 500V
C2	1-124-024-00	ELECT 4.7MF 20% 350V		C63	1-102-228-00	CERAMIC 470PF	10% 500V
C3	1-162-117-00	CERAMIC 100PF 10% 500V		C64	1-124-024-00	ELECT 4.7MF	20% 350V
C4	1-162-117-00	CERAMIC 100PF 10% 500V		C65	1-124-024-00	ELECT 4.7MF	20% 350V
C5	1-162-117-00	CERAMIC 100PF 10% 500V		C66	1-162-117-00	CERAMIC 100PF	10% 500V
C6	1-162-117-00	CERAMIC 100PF 10% 500V		C67	1-162-117-00	CERAMIC 100PF	10% 500V
C7	1-126-104-11	ELECT 470MF 20% 25V		C68	1-162-117-00	CERAMIC 100PF	10% 500V
C8	1-126-105-11	ELECT 1000MF 20% 25V		C69	1-124-562-11	ELECT 47MF	20% 200V
C9	1-126-104-11	ELECT 470MF 20% 25V		C70	1-124-171-00	ELECT 100MF	20% 160V
C10	1-126-105-11	ELECT 1000MF 20% 25V		C71	1-162-117-00	CERAMIC 100PF	10% 500V
C11	1-126-104-11	ELECT 470MF 20% 25V		C72	1-124-562-11	ELECT 47MF	20% 200V
C12	1-124-602-00	ELECT 2200MF 20% 25V		C73	1-124-171-00	ELECT 100MF	20% 160V
C13	1-126-104-11	ELECT 470MF 20% 25V		C74	1-124-122-11	ELECT 100MF	20% 16V
C14	1-124-602-00	ELECT 2200MF 20% 25V		C75	1-124-122-11	ELECT 100MF	20% 16V
C15	1-124-360-00	ELECT 1000MF 20% 16V		C76	Δ 1-161-953-52	CERAMIC 0.0047MF	20% 400V
C16	1-126-103-11	ELECT 470MF 20% 16V		C77	Δ 1-161-953-52	CERAMIC 0.0047MF	20% 400V
C17	1-106-375-12	MYLAR 0.022MF 10% 200V		C78	1-162-599-12	CERAMIC 0.0047MF	20% 400V
C18	1-108-638-11	MYLAR 0.1MF 10% 100V		C79	1-162-599-12	CERAMIC 0.0047MF	20% 400V
				C80	1-125-658-11	ELECT 560MF	20% 250V
				C81	1-125-658-11	ELECT 560MF	20% 250V

GA

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The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK
C82	1-123-369-00	ELECT 4.7MF	20% 25V
C83	1-101-004-00	CERAMIC 0.01MF	50V
C84	Δ 1-136-311-51	FILM 0.47MF	20% 125V
	Δ 1-136-311-61	FILM 0.47MF	(BVM-1916 ONLY) 20% 300V (BVM-2016P ONLY)
C85	Δ 1-162-578-51	CERAMIC 0.0047MF	20% 400V
C86	Δ 1-162-578-51	CERAMIC 0.0047MF	20% 400V
C87	Δ 1-162-578-51	CERAMIC 0.0047MF	20% 400V
C88	Δ 1-162-578-51	CERAMIC 0.0047MF	20% 400V
C89	Δ 1-136-311-51	FILM 0.47MF	20% 125V (BVM-1916 ONLY)
	Δ 1-136-311-61	FILM 0.47MF	20% 300V (BVM-2016P ONLY)
C90	1-136-171-00	FILM 0.033MF	5% 50V
C91	1-162-599-12	CERAMIC 0.0047MF	20% 400V (BVM-2016P ONLY)
C92	1-136-171-00	FILM 0.033MF	5% 50V
C93	1-162-599-12	CERAMIC 0.0047MF	20% 400V (BVM-2016P ONLY)
C94	1-102-038-00	CERAMIC 0.001MF	500V
C95	1-136-173-00	FILM 0.47MF	5% 50V
C96	1-102-050-00	CERAMIC 0.01MF	99% 500V
C97	1-136-173-00	FILM 0.47MF	5% 50V
C98	1-136-173-00	FILM 0.47MF	5% 50V
C99	1-102-050-00	CERAMIC 0.01MF	99% 500V
C100	1-162-117-00	CERAMIC 100PF	10% 500V
C101	1-162-117-00	CERAMIC 100PF	10% 500V
C102	1-136-601-11	FILM 0.01MF	5% 630V
C103	1-136-601-11	FILM 0.01MF	5% 630V

<DIODE>

D1	8-719-912-51	DIODE ESAC25-04C
D2	8-719-918-73	DIODE ESAC25-04N
D3	8-719-901-73	DIODE ESAD25-04D
D4	8-719-901-73	DIODE ESAD25-04D
D5	8-719-907-24	DIODE ESAC31-02D
D6	8-719-907-24	DIODE ESAC31-02D
D7	8-719-300-33	DIODE RU-3AM
D8	8-719-300-52	DIODE CTU-38R
D9	8-719-300-53	DIODE CTU-38S
D10	8-719-912-51	DIODE ESAC25-04C
D11	8-719-918-73	DIODE ESAC25-04N
D12	8-719-911-19	DIODE ISS119
D13	8-719-911-19	DIODE ISS119
D14	8-719-100-58	DIODE RD10EB3
D15	8-719-911-19	DIODE ISS119
D16	8-719-911-19	DIODE ISS119
D17	8-719-911-19	DIODE ISS119
D18	8-719-109-89	DIODE RD5.6ESB2
D20	8-719-200-02	DIODE 10E-2
D21	Δ 8-719-300-07	DIODE RB406N
D22	8-759-157-40	IC UPC574J
D23	8-719-911-19	DIODE ISS119
D24	8-719-100-58	DIODE RD10EB3
D25	8-719-911-19	DIODE ISS119
D26	8-719-003-08	THYRISTOR CR3CM-8
D27	8-719-982-04	DIODE ERB81-004
D28	8-719-982-04	DIODE ERB81-004
D29	8-719-982-04	DIODE ERB81-004
D30	8-719-982-04	DIODE ERB81-004
D31	8-719-300-33	DIODE RU-3AM
D32	8-719-300-33	DIODE RU-3AM

<CONNECTOR>

REF. NO.	PART NO.	DESCRIPTION	REMARK
GA1	1-506-348-XX	PIN, CONNECTOR 3P	
GA2	*1-506-371-00	PIN, CONNECTOR 2P	
GA3	*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P	
GA4	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P	
GA5	*1-566-055-11	PIN, CONNECTOR 3P	
GA6	*1-566-055-11	PIN, CONNECTOR 3P	
GA7	*1-566-058-11	PIN, CONNECTOR 6P	
GA8	*1-566-057-11	PIN, CONNECTOR 5P	
<IC>			
IC1	1-806-805-11	IC MC5433	
IC2	8-759-904-94	IC TL494CN	
IC3	8-759-904-94	IC TL494CN	
<COIL>			
L3	1-459-643-11	COIL, CHOKE 525UH	
L4	1-459-643-11	COIL, CHOKE 525UH	
L5	1-459-643-11	COIL, CHOKE 525UH	
L6	1-459-643-11	COIL, CHOKE 525UH	
L7	1-459-207-00	COIL, CORE	
L8	1-459-644-11	COIL, CHOKE 2.9MMH	
L9	1-459-645-11	COIL, CHOKE 20MMH	
L10	1-421-329-00	COIL, CHOKE	
L11	1-421-329-00	COIL, CHOKE	
L12	1-421-329-00	COIL, CHOKE	
L13	1-421-329-00	COIL, CHOKE	
L14	1-421-329-00	COIL, CHOKE	
L15	1-421-329-00	COIL, CHOKE	
L16	1-421-329-00	COIL, CHOKE	
L17	Δ 1-421-590-11	TRANSFORMER, LINE FILTER	
L18	Δ 1-421-590-11	TRANSFORMER, LINE FILTER	
<TRANSISTOR>			
Q1	8-729-301-76	TRANSISTOR STR8124-R	
Q2	8-729-301-76	TRANSISTOR STR8124-R	
Q3	8-729-140-96	TRANSISTOR 2SD774-34	
Q4	8-729-140-96	TRANSISTOR 2SD774-34	
Q5	8-729-140-96	TRANSISTOR 2SD774-34	
Q6	8-729-140-96	TRANSISTOR 2SD774-34	
Q7	8-729-140-97	TRANSISTOR 2SB734-34	
Q8	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q9	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q10	8-729-313-42	TRANSISTOR 2SD1134-C	
Q11	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q12	8-729-140-96	TRANSISTOR 2SD774-34	
Q13	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q14	8-729-119-78	TRANSISTOR 2SC2785-HFE	
<RESISTOR>			
R1	1-215-857-11	METAL OXIDE 10 5% 1W	F
R2	1-215-857-11	METAL OXIDE 10 5% 1W	F
R3	1-247-715-11	CARBON 1.5K 5% 1/4W	
R4	1-215-857-11	METAL OXIDE 10 5% 1W	F
R5	1-215-857-11	METAL OXIDE 10 5% 1W	F
R6	1-249-447-11	CARBON 1 5% 1/4W	F
R7	1-247-692-11	CARBON 22 5% 1/4W	
R8	1-249-418-11	CARBON 1.2K 5% 1/4W	
R9	1-249-382-11	CARBON 1.2 5% 1/4W	F
R10	1-249-447-11	CARBON 1 5% 1/4W	F
R11	1-247-692-11	CARBON 22 5% 1/4W	
R12	1-249-418-11	CARBON 1.2K 5% 1/4W	
R13	1-215-889-00	METAL OXIDE 330 5% 2W	F
R14	1-247-700-11	CARBON 100 5% 1/4W	

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The components identified by Δ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
Should replacement be required, replace only with the value originally used.

GA GB

REF. NO.	PART NO.	DESCRIPTION	REMARK
R15	1-247-709-11	CARBON 510 5% 1/4W	
R16	1-247-709-11	CARBON 510 5% 1/4W	
R17	1-247-700-11	CARBON 100 5% 1/4W	
R18	1-249-425-11	CARBON 4.7K 5% 1/4W	
R19	1-249-419-11	CARBON 1.5K 5% 1/4W	
R20	1-247-838-00	CARBON 2K 5% 1/4W	
R21	1-249-417-11	CARBON 1K 5% 1/4W	
R22	1-249-409-11	CARBON 220 5% 1/4W	
R23	1-249-417-11	CARBON 1K 5% 1/4W	
R24	1-249-421-11	CARBON 2.2K 5% 1/4W	
R25	1-249-409-11	CARBON 220 5% 1/4W	
R26	1-247-700-11	CARBON 100 5% 1/4W	
R27	1-247-713-11	CARBON 1K 5% 1/4W	
R28	1-247-713-11	CARBON 1K 5% 1/4W	
R29	1-247-700-11	CARBON 100 5% 1/4W	
R30	1-215-886-11	METAL OXIDE 100 5% 2W F	
R31	1-215-886-11	METAL OXIDE 100 5% 2W F	
R32	1-215-886-11	METAL OXIDE 100 5% 2W F	
R33	1-247-697-11	CARBON 56 5% 1/4W F	
R34	1-247-697-11	CARBON 56 5% 1/4W F	
R35	1-215-863-11	METAL OXIDE 100 5% 1W F	
R36	1-249-425-11	CARBON 4.7K 5% 1/4W	
R37	1-249-420-11	CARBON 1.8K 5% 1/4W	
R38	1-249-429-11	CARBON 10K 5% 1/4W	
R39	1-249-413-11	CARBON 470 5% 1/4W	
R40	1-215-453-00	METAL 22K 1% 1/4W	
R41	1-249-425-11	CARBON 4.7K 5% 1/4W	
R42	1-215-437-00	METAL 4.7K 1% 1/4W	
R43	1-215-435-00	METAL 3.9K 1% 1/4W	
R44	1-215-427-00	METAL 1.8K 1% 1/4W	
R45	1-247-713-11	CARBON 1K 5% 1/4W	
R46	1-249-417-11	CARBON 1K 5% 1/4W	
R47	1-216-995-11	METAL 820 1% 10W	
R48	1-215-866-11	METAL OXIDE 330 5% 1W F	
Δ R52	Δ	METAL OXIDE 2W F	
Δ R53	Δ	METAL 1/4W F	
R54	1-215-901-00	METAL OXIDE 33K 5% 2W F	
R55	1-215-426-00	METAL 1.6K 1% 1/4W	
R60	1-249-420-11	CARBON 1.8K 5% 1/4W	
R61	1-249-420-11	CARBON 1.8K 5% 1/4W	
R62	1-249-429-11	CARBON 10K 5% 1/4W	
R64	1-249-426-11	CARBON 5.6K 5% 1/4W	
R65	1-215-437-00	METAL 4.7K 1% 1/4W	
R66	1-215-453-00	METAL 22K 1% 1/4W	
Δ R67	Δ	METAL 1/2W	
Δ R68	Δ	METAL 1/4W F	
R74	1-215-889-00	METAL OXIDE 330 5% 2W F	
R77	1-215-433-00	METAL 3.3K 1% 1/4W	
R78	1-215-433-00	METAL 3.3K 1% 1/4W	
R80	Δ 1-202-643-35	SOLID 820K 10% 1/2W	
R81	1-215-461-00	METAL 47K 1% 1/4W	
R82	1-215-461-00	METAL 47K 1% 1/4W	
R83	1-215-461-00	METAL 47K 1% 1/4W	
R84	1-215-459-00	METAL 39K 1% 1/4W	
R85	1-215-449-00	METAL 15K 1% 1/4W	
R86	1-215-437-00	METAL 4.7K 1% 1/4W	
R87	1-249-405-11	CARBON 100 5% 1/4W	
R88	1-249-433-11	CARBON 22K 5% 1/4W	
R89	1-249-429-11	CARBON 10K 5% 1/4W	
R90	1-249-429-11	CARBON 10K 5% 1/4W	
R91	1-249-429-11	CARBON 10K 5% 1/4W	
R92	Δ 1-217-295-11	WIREWOUND 5.6 10% 5W F	
R93	1-215-886-11	METAL OXIDE 100 5% 2W F	
R94	1-205-538-00	WIREWOUND 4.7 10% 10W	

REF. NO.	PART NO.	DESCRIPTION	REMARK
R95	1-215-904-11	METAL OXIDE 100K 5% 2W F	
R96	1-215-904-11	METAL OXIDE 100K 5% 2W F	
R97	1-215-904-11	METAL OXIDE 100K 5% 2W F	
R98	1-215-904-11	METAL OXIDE 100K 5% 2W F	
<VARIABLE RESISTOR>			
RV1	1-237-514-21	RES. ADJ. CERMET 500	
RV2	1-237-515-21	RES. ADJ. CERMET 1K	
<RELAY>			
RY1	Δ 1-515-805-11	RELAY, POWER	
<TRANSFORMER>			
T1	Δ 1-448-433-11	TRANSFORMER, CONVERTER (S.R.T)	
T2	Δ 1-447-106-11	TRANSFORMER, DRIVE	
T3	Δ 1-421-624-12	TRANSFORMER, CURRENT	
T4	Δ 1-447-426-12	TRANSFORMER, CONVERTER	
T5	Δ 1-448-432-12	TRANSFORMER, CONVERTER (S.R.T)	
T6	Δ 1-447-106-11	TRANSFORMER, DRIVE	
T7	Δ 1-421-624-12	TRANSFORMER, CURRENT	
<THERMISTOR>			
TH1	Δ 1-800-820-12	THERMISTOR, POWER	
THP1	Δ 1-806-387-12	THERMISTOR (POSITIVE)	
THP2	Δ 1-800-686-33	THERMISTOR (POSITIVE)	

*1-627-679-11 GB BOARD			

<CAPACITOR>			
C1	1-124-903-11	ELECT 1MF 20% 50V	
C2	1-124-903-11	ELECT 1MF 20% 50V	
<DIODE>			
D1	8-719-911-19	DIODE 1SS119	
D2	8-719-110-08	DIODE RD8.2ESB2	
D3	8-719-911-19	DIODE 1SS119	
D4	8-719-911-19	DIODE 1SS119	
D5	8-719-911-19	DIODE 1SS119	
D6	8-719-110-08	DIODE RD8.2ESB2	
D7	8-719-812-41	DIODE TLR124	
D8	8-719-911-19	DIODE 1SS119	
D9	8-719-911-19	DIODE 1SS119	
D10	8-719-812-41	DIODE TLR124	
D11	8-719-110-08	DIODE RD8.2ESB2	
D12	8-719-911-19	DIODE 1SS119	
D13	8-719-911-19	DIODE 1SS119	
D14	8-719-911-19	DIODE 1SS119	
D15	8-719-911-19	DIODE 1SS119	
D16	8-719-911-19	DIODE 1SS119	
D17	8-719-110-08	DIODE RD8.2ESB2	
D18	8-719-911-19	DIODE 1SS119	
D19	8-719-911-19	DIODE 1SS119	

GB GC HA HH HW

REF.NO. PART NO. DESCRIPTION

<CONNECTOR>

GA1 *1-506-603-11 PLUG, L TYPE (2.0MM PITCH) 10P

<TRANSISTOR>

Q1 8-729-119-76 TRANSISTOR 2SA1175-HFE
 Q2 8-729-119-78 TRANSISTOR 2SC2785-HFE
 Q3 8-729-119-76 TRANSISTOR 2SA1175-HFE
 Q4 8-729-119-78 TRANSISTOR 2SC2785-HFE
 Q5 8-729-119-76 TRANSISTOR 2SA1175-HFE
 Q6 8-729-119-76 TRANSISTOR 2SA1175-HFE
 Q7 8-729-119-76 TRANSISTOR 2SA1175-HFE
 Q8 8-729-119-78 TRANSISTOR 2SC2785-HFE
 Q9 8-729-119-76 TRANSISTOR 2SA1175-HFE
 Q10 8-729-119-78 TRANSISTOR 2SC2785-HFE

<RESISTOR>

R1 1-249-427-11 CARBON 6.8K 5% 1/4W
 R2 1-249-428-11 CARBON 8.2K 5% 1/4W
 R3 1-249-429-11 CARBON 10K 5% 1/4W
 R4 1-249-427-11 CARBON 6.8K 5% 1/4W
 R5 1-249-420-11 CARBON 1.8K 5% 1/4W
 R6 1-249-427-11 CARBON 6.8K 5% 1/4W
 R7 1-249-420-11 CARBON 1.8K 5% 1/4W
 R8 1-249-429-11 CARBON 10K 5% 1/4W
 R9 1-249-427-11 CARBON 6.8K 5% 1/4W
 R10 1-249-428-11 CARBON 8.2K 5% 1/4W
 R11 1-249-424-11 CARBON 3.9K 5% 1/4W
 R12 1-249-421-11 CARBON 2.2K 5% 1/4W
 R13 1-249-425-11 CARBON 4.7K 5% 1/4W
 R14 1-249-421-11 CARBON 2.2K 5% 1/4W
 R15 1-249-424-11 CARBON 3.9K 5% 1/4W
 R16 1-249-421-11 CARBON 2.2K 5% 1/4W
 R17 1-249-425-11 CARBON 4.7K 5% 1/4W
 R18 1-249-421-11 CARBON 2.2K 5% 1/4W
 R19 1-249-429-11 CARBON 10K 5% 1/4W
 R20 1-249-429-11 CARBON 10K 5% 1/4W
 R21 1-249-429-11 CARBON 10K 5% 1/4W
 R22 1-249-423-11 CARBON 3.3K 5% 1/4W
 R23 1-249-423-11 CARBON 3.3K 5% 1/4W
 R24 1-249-429-11 CARBON 10K 5% 1/4W
 R25 1-249-429-11 CARBON 10K 5% 1/4W

*1-617-885-11 GC BOARD

<CAPACITOR>

C1 1-126-233-11 ELECT 22MF 20% 25V
 C2 1-126-233-11 ELECT 22MF 20% 25V
 C3 1-126-233-11 ELECT 22MF 20% 25V
 C4 1-126-233-11 ELECT 22MF 20% 25V
 C5 1-126-233-11 ELECT 22MF 20% 25V
 C6 1-126-233-11 ELECT 22MF 20% 25V
 C7 1-126-233-11 ELECT 22MF 20% 25V
 C8 1-126-233-11 ELECT 22MF 20% 25V
 C9 1-126-233-11 ELECT 22MF 20% 25V
 C12 1-101-004-00 CERAMIC 0.01MF 50V
 C14 1-101-004-00 CERAMIC 0.01MF 50V
 C16 1-101-004-00 CERAMIC 0.01MF 50V
 C17 1-101-004-00 CERAMIC 0.01MF 50V
 C18 1-101-004-00 CERAMIC 0.01MF 50V

REMARK

REF.NO. PART NO. DESCRIPTION

REMARK

<CONNECTOR>

GC1 *1-566-044-11 PIN, CONNECTOR 5P
 GC2 *1-566-057-11 PIN, CONNECTOR 5P
 GC3 *1-566-044-11 PIN, CONNECTOR 5P

<IC>

IC1 8-759-929-65 IC LM7912CT
 IC2 8-759-929-65 IC LM7912CT
 IC3 8-759-231-58 IC TA7812S
 IC4 8-759-231-58 IC TA7812S

*1-631-683-11 HA BOARD

<CONNECTOR>

HA301 *1-566-055-11 PIN, CONNECTOR 3P
 HA302 *1-566-056-11 PIN, CONNECTOR 4P
 HA303 *1-566-064-11 PIN, CONNECTOR 12P
 HA304 *1-566-054-11 PIN, CONNECTOR 2P

<RESISTOR>

R301 1-247-814-11 CARBON 200 5% 1/4W
 R302 1-215-469-00 METAL 100K 1% 1/4W

<VARIABLE RESISTOR>

RV301 1-237-519-21 RES, ADJ, CERNET 20K

<SWITCH>

S301 1-570-565-11 SWITCH, PUSH (10 KEY)

*1-627-682-11 HH BOARD

*1-566-614-11 PLUG (L TYPE) 3P

<VARIABLE RESISTOR>

RV1 1-238-332-11 RES, VAR, CARBON 20K
 RV2 1-238-332-11 RES, VAR, CARBON 20K
 RV3 1-238-332-11 RES, VAR, CARBON 20K
 RV4 1-238-332-11 RES, VAR, CARBON 20K

*1-647-257-11 HW BOARD

7-682-547-09 SCREW +BVTT 3X6 (S)

<HOLDER>

D1 *4-026-910-00 HOLDER, LED
 D2 *4-026-910-00 HOLDER, LED

<DIODE>

D101 8-719-938-68 DIODE GL3HY8
 D102 8-719-812-41 DIODE TLR124

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<RESISTOR>							
R101	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W		D23	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D23	
<SWITCH>				D24	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D24	
S101	1-570-566-11	SWITCH, PUSH (4 KEY)		D25	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D25	
*****				D26	8-719-404-46	DIODE MA110	
	*1-647-258-11	HX BOARD	*****	D27	8-719-404-46	DIODE MA110	
<SWITCH>				D28	8-719-404-46	DIODE MA110	
S1	1-692-470-11	SWITCH, PUSH (4 KEY)		D29	8-719-404-46	DIODE MA110	
*****				D30	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D30	
	A-1371-895-A	HY BOARD, COMPLETE	*****	D31	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D31	
<CAPACITOR>				D32	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D32	
C1	1-124-584-00	ELECT 100MF 20% 10V		D33	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D33	
C2	1-124-584-00	ELECT 100MF 20% 10V		D34	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D34	
C3	1-124-584-00	ELECT 100MF 20% 10V		D35	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D35	
C4	1-163-031-11	CERAMIC CHIP 0.01MF 50V		D36	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D36	
C5	1-163-031-11	CERAMIC CHIP 0.01MF 50V		D37	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D37	
C6	1-163-031-11	CERAMIC CHIP 0.01MF 50V		D38	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D38	
<DIODE>				D39	8-719-404-46	DIODE MA110	
D1	8-719-404-46	DIODE MA110		D40	8-719-404-46	DIODE MA110	
D2	8-719-404-46	DIODE MA110		D41	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D41	
D3	8-719-404-46	DIODE MA110		D42	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D42	
D4	8-719-404-46	DIODE MA110		D43	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D43	
D5	8-719-404-46	DIODE MA110		D44	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D44	
D6	8-719-404-46	DIODE MA110		D45	8-719-404-46	DIODE MA110	
D7	8-719-404-46	DIODE MA110		D46	8-719-404-46	DIODE MA110	
D8	8-719-404-46	DIODE MA110		D47	8-719-404-46	DIODE MA110	
D9	8-719-404-46	DIODE MA110		D48	8-719-404-46	DIODE MA110	
D10	8-719-404-46	DIODE MA110		D49	8-719-404-46	DIODE MA110	
D11	8-719-404-46	DIODE MA110		D50	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D50	
D12	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D12		D51	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D51	
D13	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D13		D52	8-719-404-46	DIODE MA110	
D14	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D14		D53	8-719-404-46	DIODE MA110	
D15	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D15		D54	8-719-404-46	DIODE MA110	
D16	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D16		D55	8-719-404-46	DIODE MA110	
D17	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D17		D56	8-719-404-46	DIODE MA110	
D18	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D18		D57	8-719-404-46	DIODE MA110	
D19	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D19		D58	8-719-404-46	DIODE MA110	
D20	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D20		D59	8-719-404-46	DIODE MA110	
D21	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D21		D60	8-719-404-46	DIODE MA110	
				D61	8-719-404-46	DIODE MA110	
				D62	8-719-404-46	DIODE MA110	
				D63	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D63	
				D64	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D64	
				D65	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D65	

HY

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
D66	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D66		R19	1-216-045-00	METAL GLAZE 680 5% 1/10W	
D67	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D67		R20	1-216-033-00	METAL GLAZE 220 5% 1/10W	
D68	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D68		R21	1-216-043-00	METAL GLAZE 560 5% 1/10W	
D69	8-719-938-68 *4-374-937-01	DIODE GL3HY8 HOLDER, LED; D69		R22	1-216-033-00	METAL GLAZE 220 5% 1/10W	
<CONNECTOR>				R23	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
HY1	*1-566-045-11	PIN, CONNECTOR 6P		R24	1-216-043-00	METAL GLAZE 560 5% 1/10W	
HY2	*1-566-047-11	PIN, CONNECTOR 8P		R25	1-216-043-00	METAL GLAZE 560 5% 1/10W	
HY3	*1-566-052-11	PIN, CONNECTOR 13P		R26	1-216-043-00	METAL GLAZE 560 5% 1/10W	
HY4	*1-566-047-11	PIN, CONNECTOR 8P		R27	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
<IC>				R28	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
IC1	8-757-991-00	IC CX-7991		R29	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
IC2	8-757-991-00	IC CX-7991		R30	1-216-043-00	METAL GLAZE 560 5% 1/10W	
IC3	8-757-991-00	IC CX-7991		R31	1-216-043-00	METAL GLAZE 560 5% 1/10W	
<TRANSISTOR>				R32	1-216-043-00	METAL GLAZE 560 5% 1/10W	
Q1	8-729-107-46	TRANSISTOR 2SC3624A-L15		R33	1-216-043-00	METAL GLAZE 560 5% 1/10W	
<RESISTOR>				R34	1-216-043-00	METAL GLAZE 560 5% 1/10W	
JR1	1-216-295-00	METAL GLAZE 0 5% 1/10W		R35	1-216-043-00	METAL GLAZE 560 5% 1/10W	
JR2	1-216-295-00	METAL GLAZE 0 5% 1/10W		R36	1-216-043-00	METAL GLAZE 560 5% 1/10W	
JR3	1-216-295-00	METAL GLAZE 0 5% 1/10W		R37	1-216-043-00	METAL GLAZE 560 5% 1/10W	
JR4	1-216-295-00	METAL GLAZE 0 5% 1/10W		R38	1-216-043-00	METAL GLAZE 560 5% 1/10W	
JR5	1-216-295-00	METAL GLAZE 0 5% 1/10W		R39	1-216-043-00	METAL GLAZE 560 5% 1/10W	
JR6	1-216-295-00	METAL GLAZE 0 5% 1/10W		R40	1-216-043-00	METAL GLAZE 560 5% 1/10W	
JR7	1-216-295-00	METAL GLAZE 0 5% 1/10W		R41	1-216-043-00	METAL GLAZE 560 5% 1/10W	
JR8	1-216-295-00	METAL GLAZE 0 5% 1/10W		R42	1-216-043-00	METAL GLAZE 560 5% 1/10W	
JR9	1-216-295-00	METAL GLAZE 0 5% 1/10W		R43	1-216-043-00	METAL GLAZE 560 5% 1/10W	
JR10	1-216-295-00	METAL GLAZE 0 5% 1/10W		<SWITCH>			
JR11	1-216-295-00	METAL GLAZE 0 5% 1/10W		S1	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR12	1-216-295-00	METAL GLAZE 0 5% 1/10W		S2	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR13	1-216-295-00	METAL GLAZE 0 5% 1/10W		S3	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR14	1-216-295-00	METAL GLAZE 0 5% 1/10W		S4	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR15	1-216-295-00	METAL GLAZE 0 5% 1/10W		S5	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR16	1-216-295-00	METAL GLAZE 0 5% 1/10W		S6	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR17	1-216-295-00	METAL GLAZE 0 5% 1/10W		S7	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
JR18	1-216-295-00	METAL GLAZE 0 5% 1/10W		S8	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R1	1-216-043-00	METAL GLAZE 560 5% 1/10W		S9	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R2	1-216-043-00	METAL GLAZE 560 5% 1/10W		S10	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R3	1-216-043-00	METAL GLAZE 560 5% 1/10W		S11	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R4	1-216-043-00	METAL GLAZE 560 5% 1/10W		S12	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R5	1-216-043-00	METAL GLAZE 560 5% 1/10W		S13	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R6	1-216-043-00	METAL GLAZE 560 5% 1/10W		S14	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R7	1-216-043-00	METAL GLAZE 560 5% 1/10W		S15	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R8	1-216-043-00	METAL GLAZE 560 5% 1/10W		S16	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R9	1-216-043-00	METAL GLAZE 560 5% 1/10W		S17	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R10	1-216-043-00	METAL GLAZE 560 5% 1/10W		S19	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R11	1-216-043-00	METAL GLAZE 560 5% 1/10W		S20	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R12	1-216-043-00	METAL GLAZE 560 5% 1/10W		S21	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R13	1-216-043-00	METAL GLAZE 560 5% 1/10W		S22	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R14	1-216-043-00	METAL GLAZE 560 5% 1/10W		S23	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R15	1-216-043-00	METAL GLAZE 560 5% 1/10W		S24	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R16	1-216-043-00	METAL GLAZE 560 5% 1/10W		S25	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R17	1-216-043-00	METAL GLAZE 560 5% 1/10W		S26	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R18	1-216-043-00	METAL GLAZE 560 5% 1/10W		S27	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
				S28	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
				S29	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
				S30	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
				S31	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
				S32	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	

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HZ

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
HZ4	*1-566-064-11	PIN, CONNECTOR 12P		Q16	8-729-901-01	TRANSISTOR DTC144EK	
HZ5	*1-566-058-11	PIN, CONNECTOR 6P		Q17	8-729-901-01	TRANSISTOR DTC144EK	
HZ6	*1-566-064-11	PIN, CONNECTOR 12P		Q18	8-729-901-01	TRANSISTOR DTC144EK	
HZ7	*1-566-064-11	PIN, CONNECTOR 12P		Q19	8-729-122-63	TRANSISTOR 2SA1226-E4	
HZ8	*1-566-064-11	PIN, CONNECTOR 12P		Q20	8-729-901-01	TRANSISTOR DTC144EK	
				Q21	8-729-901-01	TRANSISTOR DTC144EK	
HZ9	*1-566-058-11	PIN, CONNECTOR 6P		Q22	8-729-901-01	TRANSISTOR DTC144EK	
HZ10	*1-566-062-11	PIN, CONNECTOR 10P		Q23	8-729-901-01	TRANSISTOR DTC144EK	
HZ11	*1-566-062-11	PIN, CONNECTOR 10P		Q24	8-729-901-01	TRANSISTOR DTC144EK	
HZ12	*1-566-065-11	PIN, CONNECTOR 13P		Q25	8-729-901-01	TRANSISTOR DTC144EK	
				Q26	8-729-901-01	TRANSISTOR DTC144EK	
<IC>				Q27	8-729-901-01	TRANSISTOR DTC144EK	
IC1	8-759-939-25	IC SN75176BP		Q28	8-729-901-06	TRANSISTOR DTA144EK	
IC2	8-759-939-25	IC SN75176BP		Q29	8-729-901-01	TRANSISTOR DTC144EK	
IC3	8-759-164-54	IC X25040		Q30	8-729-122-63	TRANSISTOR 2SA1226-E4	
IC4	8-759-995-76	IC PST529C		Q900	8-729-101-11	TRANSISTOR 2SC2351-R2R3	
IC5	8-759-700-78	IC NJM082M					
IC6	8-759-112-72	IC UPD6142G-101		Q901	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
IC7	8-759-172-00	IC TC74HCT02AF(EL)		Q902	8-729-901-01	TRANSISTOR DTC144EK	
IC8	8-759-172-01	IC TC74HCT32AF(EL)		Q903	8-729-901-01	TRANSISTOR DTC144EK	
IC9	8-759-233-66	IC TC74HCT04AF		<RESISTOR>			
IC10	8-759-700-78	IC NJM082M		JR1	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC11	8-759-172-02	IC TC74HCT139AF(EL)		JR2	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC12	8-759-009-05	IC MC14051BF		JR3	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC13	8-759-938-68	IC CXD1095Q		JR4	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC14	8-759-700-78	IC NJM082M		JR5	1-216-295-00	METAL GLAZE 0 5% 1/10W	
IC15	8-759-238-69	IC TC74HC299AF-TP1		R1	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
IC16	8-759-009-05	IC MC14051BF		R2	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
IC17	8-759-172-00	IC TC74HCT02AF(EL)		R3	1-249-417-11	CARBON 1K 5% 1/4W	
IC18	8-759-700-78	IC NJM082M		R4	1-216-025-00	METAL GLAZE 100 5% 1/10W	
IC19	8-759-700-78	IC NJM082M		R5	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
IC20	8-759-518-73	IC DAC8043GP		R6	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
IC21	8-759-518-76	IC REF02EZ		R7	1-249-417-11	CARBON 1K 5% 1/4W	
IC22	8-759-700-78	IC NJM082M		R8	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
IC23	8-759-700-78	IC NJM082M		R9	1-249-417-11	CARBON 1K 5% 1/4W	
IC24	8-759-164-55	IC HD6475368CP-BVM		R10	1-216-620-11	METAL CHIP 51 0.50% 1/10W	
<IC SOCKET>				R11	1-216-080-00	METAL GLAZE 20K 5% 1/10W	
ICS3	1-526-652-21	SOCKET, IC (DP) 8P		R12	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
ICS24	1-540-069-11	SOCKET, IC (IC113) 84P		R13	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
<COIL>				R14	1-249-417-11	CARBON 1K 5% 1/4W	
L1	1-408-409-00	INDUCTOR 10UH		R15	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
L2	1-408-409-00	INDUCTOR 10UH		R16	1-249-417-11	CARBON 1K 5% 1/4W	
L3	1-410-210-21	INDUCTOR CHIP 33UH		R17	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
L4	1-408-409-00	INDUCTOR 10UH		R18	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
<TRANSISTOR>				R19	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
Q2	8-729-901-01	TRANSISTOR DTC144EK		R20	1-216-091-00	METAL GLAZE 56K 5% 1/10W	
Q3	8-729-901-01	TRANSISTOR DTC144EK		R21	1-249-417-11	CARBON 1K 5% 1/4W	
Q4	8-729-901-01	TRANSISTOR DTC144EK		R22	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q5	8-729-901-01	TRANSISTOR DTC144EK		R23	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
Q6	8-729-901-01	TRANSISTOR DTC144EK		R24	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
Q7	8-729-901-01	TRANSISTOR DTC144EK		R25	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q8	8-729-901-01	TRANSISTOR DTC144EK		R26	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q9	8-729-901-01	TRANSISTOR DTC144EK		R27	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
Q10	8-729-901-01	TRANSISTOR DTC144EK		R28	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q11	8-729-901-01	TRANSISTOR DTC144EK		R29	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q12	8-729-901-01	TRANSISTOR DTC144EK		R30	1-216-059-00	METAL GLAZE 2.7K 5% 1/10W	
Q13	8-729-901-01	TRANSISTOR DTC144EK		R31	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
Q14	8-729-901-01	TRANSISTOR DTC144EK		R32	1-216-079-00	METAL GLAZE 18K 5% 1/10W	
Q15	8-729-901-01	TRANSISTOR DTC144EK		R33	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
				R34	1-216-097-00	METAL GLAZE 100K 5% 1/10W	
				R35	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
				R36	1-216-073-00	METAL GLAZE 10K 5% 1/10W	

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

HZ **P** **QA**

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R37	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R106	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R38	1-249-417-11	CARBON	1K 5% 1/4W	R107	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R39	1-216-093-00	METAL GLAZE	68K 5% 1/10W	R111	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R40	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R112	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R41	1-249-417-11	CARBON	1K 5% 1/4W	R181	1-216-043-00	METAL GLAZE	560 5% 1/10W
R42	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R191	1-216-049-00	METAL GLAZE	1K 5% 1/10W
R43	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R208	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R44	1-249-417-11	CARBON	1K 5% 1/4W	R209	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W
R45	1-216-073-00	METAL GLAZE	10K 5% 1/10W			<SWITCH>	
R46	1-216-049-00	METAL GLAZE	1K 5% 1/10W	S1	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R47	1-216-081-00	METAL GLAZE	22K 5% 1/10W	S2	1-572-482-11	SWITCH, KEY BOARD (1 KEY)	
R48	1-249-417-11	CARBON	1K 5% 1/4W			<CRYSTAL>	
R49	1-216-073-00	METAL GLAZE	10K 5% 1/10W	X1	1-577-121-11	VIBRATOR, CRYSTAL	
R50	1-249-417-11	CARBON	1K 5% 1/4W			*****	
R51	1-249-417-11	CARBON	1K 5% 1/4W			*1-631-678-11 P BOARD	
R52	1-216-073-00	METAL GLAZE	10K 5% 1/10W			*****	
R53	1-249-417-11	CARBON	1K 5% 1/4W			Δ 1-439-382-21 TRANSFORMER ASSY, FLYBACK	
R54	1-216-073-00	METAL GLAZE	10K 5% 1/10W			<COIL>	
R55	1-216-097-00	METAL GLAZE	100K 5% 1/10W	L11	1-459-215-00	COIL (WITH CORE)	
R56	1-216-073-00	METAL GLAZE	10K 5% 1/10W			*****	
R57	1-216-073-00	METAL GLAZE	10K 5% 1/10W			*1-617-895-11 QA BOARD	
R58	1-216-073-00	METAL GLAZE	10K 5% 1/10W			*****	
R59	1-216-097-00	METAL GLAZE	100K 5% 1/10W			<CAPACITOR>	
R60	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C1	1-108-692-11	MYLAR	0.01MF 10% 200V
R61	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C2	1-126-235-11	ELECT	100MF 20% 16V
R62	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C3	1-101-004-00	CERAMIC	0.01MF 50V
R63	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	C4	1-108-692-11	MYLAR	0.01MF 10% 200V
R64	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C5	1-126-235-11	ELECT	100MF 20% 16V
R65	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	C6	1-101-004-00	CERAMIC	0.01MF 50V
R66	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C7	1-108-692-11	MYLAR	0.01MF 10% 200V
R67	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	C8	1-126-235-11	ELECT	100MF 20% 16V
R68	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C9	1-101-004-00	CERAMIC	0.01MF 50V
R69	1-216-059-00	METAL GLAZE	2.7K 5% 1/10W	C10	1-102-951-00	CERAMIC	15PF 5% 50V
R70	1-216-091-00	METAL GLAZE	56K 5% 1/10W	C11	1-102-951-00	CERAMIC	15PF 5% 50V
R71	1-216-073-00	METAL GLAZE	10K 5% 1/10W	C12	1-102-951-00	CERAMIC	15PF 5% 50V
R73	1-216-097-00	METAL GLAZE	100K 5% 1/10W			<RESISTOR>	
R74	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R1	1-215-449-00	METAL	15K 1% 1/4I
R75	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R2	1-215-449-00	METAL	15K 1% 1/4I
R76	1-216-097-00	METAL GLAZE	100K 5% 1/10W	R3	1-249-439-11	CARBON	68K 5% 1/4I
R77	1-216-085-00	METAL GLAZE	33K 5% 1/10W			<SWITCH>	
R78	1-216-073-00	METAL GLAZE	10K 5% 1/10W	S1	1-570-857-11	SWITCH, SLIDE	
R79	1-216-080-00	METAL GLAZE	20K 5% 1/10W	S2	1-570-857-11	SWITCH, SLIDE	
R80	1-216-088-00	METAL GLAZE	43K 5% 1/10W	S3	1-570-857-11	SWITCH, SLIDE	
R81	1-216-073-00	METAL GLAZE	10K 5% 1/10W			*****	
R82	1-216-097-00	METAL GLAZE	100K 5% 1/10W				
R83	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R84	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R85	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R86	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R87	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R88	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R89	1-216-097-00	METAL GLAZE	100K 5% 1/10W				
R90	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R91	1-216-081-00	METAL GLAZE	22K 5% 1/10W				
R92	1-216-089-00	METAL GLAZE	47K 5% 1/10W				
R93	1-216-089-00	METAL GLAZE	47K 5% 1/10W				
R94	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R95	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R100	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R101	1-216-073-00	METAL GLAZE	10K 5% 1/10W				
R102	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R103	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W				
R104	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W				
R105	1-216-053-00	METAL GLAZE	1.5K 5% 1/10W				

7. ELECTRICAL PARTS LIST

QB TB V W XB

REF.NO. PART NO.

DESCRIPTION

REMARK

REF.NO. PART NO.

DESCRIPTION

REMARK

*1-618-786-11 QB BOARD

<CAPACITOR>

C1	1-108-692-11	MYLAR	0.01MF	10%	200V
C2	1-126-235-11	ELECT	100MF	20%	16V
C3	1-101-004-00	CERAMIC	0.01MF		50V
C4	1-108-692-11	MYLAR	0.01MF	10%	200V
C5	1-126-235-11	ELECT	100MF	20%	16V
C6	1-101-004-00	CERAMIC	0.01MF		50V
C7	1-108-692-11	MYLAR	0.01MF	10%	200V
C8	1-126-235-11	ELECT	100MF	20%	16V
C9	1-101-004-00	CERAMIC	0.01MF		50V
C10	1-102-951-00	CERAMIC	15PF	5%	50V
C11	1-102-951-00	CERAMIC	15PF	5%	50V
C12	1-102-951-00	CERAMIC	15PF	5%	50V

<RESISTOR>

R1	1-215-449-00	METAL	15K	1%	1/4W
R2	1-215-449-00	METAL	15K	1%	1/4W
R3	1-215-449-00	METAL	15K	1%	1/4W

<SWITCH>

S1	1-570-857-11	SWITCH, SLIDE
S2	1-570-857-11	SWITCH, SLIDE
S3	1-570-857-11	SWITCH, SLIDE

*A-1390-344-A TB BOARD, COMPLETE

<CONNECTOR>

CN1	*1-564-431-11	POST, CONNECTOR 3P
CN2	*1-564-431-11	POST, CONNECTOR 3P
CN11	*1-561-724-00	SOCKET, CONNECTOR 2P
CN12	*1-561-724-00	SOCKET, CONNECTOR 2P

<RESISTOR>

R100	1-249-422-11	CARBON	2.7K	5%	1/4W
R101	1-249-413-11	CARBON	470	5%	1/4W

<CONNECTOR>

TB4	*1-566-054-11	PIN, CONNECTOR 2P
TB5	*1-566-054-11	PIN, CONNECTOR 2P
TB6	*1-566-060-11	PIN, CONNECTOR 8P
TB7	*1-566-054-11	PIN, CONNECTOR 2P
TB8	*1-566-058-11	PIN, CONNECTOR 6P
TB9	*1-566-060-11	PIN, CONNECTOR 8P
TB10	*1-566-064-11	PIN, CONNECTOR 12P
TB11	*1-566-055-11	PIN, CONNECTOR 3P
TB12	*1-566-064-11	PIN, CONNECTOR 12P
TB13	*1-566-062-11	PIN, CONNECTOR 10P
TB14	*1-566-064-11	PIN, CONNECTOR 12P
TB15	*1-566-060-11	PIN, CONNECTOR 8P
TB16	*1-566-057-11	PIN, CONNECTOR 5P
TB17	*1-566-057-11	PIN, CONNECTOR 5P
TB18	*1-566-055-11	PIN, CONNECTOR 3P
TB19	*1-566-056-11	PIN, CONNECTOR 4P
TB20	*1-566-056-11	PIN, CONNECTOR 4P

TB21	*1-566-056-11	PIN, CONNECTOR 4P
TB22	*1-566-054-11	PIN, CONNECTOR 2P
TB23	*1-566-054-11	PIN, CONNECTOR 2P
TB24	*1-566-054-11	PIN, CONNECTOR 2P
TB28	*1-566-062-11	PIN, CONNECTOR 10P
TB29	*1-566-060-11	PIN, CONNECTOR 8P
TB30	*1-566-054-11	PIN, CONNECTOR 2P
TB31	*1-561-337-00	CONNECTOR, MULTI
TB32	*1-561-337-00	CONNECTOR, MULTI
TB33	*1-561-337-00	CONNECTOR, MULTI
TB34	*1-561-337-00	CONNECTOR, MULTI
TB35	*1-561-337-00	CONNECTOR, MULTI
TB36	*1-561-337-00	CONNECTOR, MULTI
TB37	*1-561-337-00	CONNECTOR, MULTI
TB38	*1-561-337-00	CONNECTOR, MULTI
TB39	*1-561-337-00	CONNECTOR, MULTI
TB40	*1-561-337-00	CONNECTOR, MULTI

*1-627-677-11 V BOARD

1-563-265-11 CONNECTOR, MULTIPLE 10P

<COMPOSITION CIRCUIT BLOCK>

CP1 1-232-350-11 COMPOSITION CIRCUIT BLOCK

<RESISTOR>

R1	1-249-405-11	CARBON	100	5%	1/4W
R2	1-249-405-11	CARBON	100	5%	1/4W
R3	1-249-405-11	CARBON	100	5%	1/4W
R4	1-249-405-11	CARBON	100	5%	1/4W
R5	1-249-405-11	CARBON	100	5%	1/4W
R6	1-249-405-11	CARBON	100	5%	1/4W
R7	1-249-405-11	CARBON	100	5%	1/4W

*1-627-678-11 W BOARD

<CAPACITOR>

C1	1-108-692-11	MYLAR	0.01MF	10%	200V
C2	1-108-692-11	MYLAR	0.01MF	10%	200V

<RESISTOR>

R1	1-214-702-00	METAL	75	1%	1/4W
R2	1-214-702-00	METAL	75	1%	1/4W
R3	1-214-702-00	METAL	75	1%	1/4W

*1-631-680-11 XB BOARD

<DIODE>

D1	8-719-901-49	DIODE LT-9010H
D2	8-719-901-49	DIODE LT-9010H

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Y Z

REF. NO.	PART NO.	DESCRIPTION	REMARK
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*1-631-679-11 Y BOARD

<DIODE>

D1 8-719-812-43 DIODE TLG124A

*1-627-687-11 Z BOARD

*1-561-337-21 CONNECTOR, MULTI

MISCELLANEOUS

Δ 1-237-165-13 RESISTOR ASSY, HIGH-VOLTAGE
 Δ 1-238-301-12 RESISTOR ASSY, HIGH-VOLTAGE
 Δ 1-426-460-11 COIL, DEMAGNETIZATION
 Δ 1-451-349-21 DEFLECTION YOKE (Y20FZA)
 Δ 1-452-337-22 NECK ASSY, CRT (NA304)
 Δ 1-532-203-11 FUSE, TIME-LAG (2.0A/250V)
(BVM-2016P ONLY)
 Δ 1-532-746-11 FUSE, GLASS TUBE (4.0A/125V)
(BVM-1916 ONLY)
1-565-791-11 CONNECTOR, BNC 1P
 Δ 1-571-877-12 SWITCH, PUSH (AC POWER)
1-941-422-15 CONNECTOR ASSY (ROUND TYPE) 12P
 Δ 8-736-121-05 CRT (M49KGH21X) (BVM-2016P ONLY)
 Δ 8-736-123-05 CRT (M49KGH20X) (BVM-1916 ONLY)

ACCESSORIES & PACKING MATERIALS

PART NO.	DESCRIPTION	REMARK
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Δ 1-532-203-11 FUSE, TIME-LAG (2.0A/250V)
 Δ 1-532-746-11 FUSE, GLASS TUBE (4.0A/125V)
 Δ 1-551-812-11 CORD, POWER (7.0A/125V) (BVM-1916 ONLY)
1-560-776-00 SOCKET, CONNECTOR 10P
 Δ 1-590-151-11 CORD SET, POWER (10.0A/250V)
(BVM-2016P ONLY)
2-990-242-01 HOLDER (B), PLUG (BVM-1916 ONLY)
*3-170-078-01 HOLDER (B), PLUG (BVM-2016P ONLY)
4-040-435-01 MANUAL, O&M
*4-361-988-02 BAG, PROTECTION (BVM-1916 ONLY)
4-378-901-01 KEY
4-386-841-01 LABEL, TALLY NUMBER
4-386-841-11 LABEL, TALLY NUMBER
*4-386-858-01 CUSHION (UPPER)
*4-386-875-01 CUSHION (FRONT LOWER)
*4-386-876-01 CUSHION (REAR LOWER)
*4-391-230-01 INDIVIDUAL CARTON (BVM-2016P ONLY)
*4-391-252-01 INDIVIDUAL CARTON (BVM-1916 ONLY)
*4-361-988-02 BAG, PROTECTION (BVM-2016P ONLY)

7. ELECTRICAL PARTS LIST



